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The Scope and Content of Resource Policy In Relation to Economic Development

Morris Miller

New York Metropolitan Region: Flight to Suburbia

Rosalind Tough and Gordon D. Mac Donald

Land and Income Distribution in Peasant Countries

Charles T. Stewart, Jr.

Airphoto Interpretation in Agricultural Research

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Metropolitan Growth and Future Political Problems

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Decline of Academic Attention to Public Utility Economics

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Measurement of Value of Recreational Areas: Wisconsin

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From Report of Board of Regents, University of Wisconsin, 1894

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LAND ECONOMICS

a quarterly journal of

PLANNING, HOUSING & PUBLIC UTILITIES

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VOLUME XXXVII
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The Scope and Content of Resource Policy in Relation to Economic Development

By MORRIS MILLER*

The Elusive Concept of Conservation

MUCH of the writings about natural resources, and especially about renewable resources such as land and water, are laden with emotive words, clichés and generalizations that are difficult to interpret or to check against facts or even against common sense based on experience. In part, this is a hangover from the emotional fervor of "the conservation movement" which, in its heyday over the first two decades of this century, left the stamp of its crusading banner slogans on

the minds of several succeeding generations in both Canada and the United States.¹ One of the most knowledgeable historians on the conservation movement describes well the attitude which has prevailed over the years:

"Those who came to the support of conservation in 1908 and 1909 [unlike the previous supporters who had a common interest in rational development] were prone to look upon all commercial development as mere materialism and upon conservation as an attempt to save resources from use rather than to use them wisely. The problem, to them, was moral rather than economic . . . tinged with the enthusiasm of a religious crusade to save America from its materialistic enemies. . . . [They] viewed with alarm the way in which industrialism, in a short space of fifty years, had altered American society, [and] looked on conservation as an antidote to changes they resisted. Sprawling urban monstrosities were replacing sobriety, honesty and hard work with disease, immorality and squalor. . . . Everywhere one saw ugly urban centres [and] conservation, even though often in a vague and general way, symbolized the direct opposite [being] oriented towards the countryside, towards nature and the eternal values inherent in nature, rather than to-

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¹ For its impact on Canada, see Alan H. Armstrong, "Thomas Adams and the Commission of Conservation," *Plan-Canada*, Vol. 1, No. 1, 1959, pp. 14-32; and F. J. Thorpe, "Historical Perspective on the Resources for Tomorrow Conference," background paper prepared for Resources for Tomorrow Conference, Montreal, October 1961, (Montreal, Canada: Queen's Printer, Ottawa, 1961).

ward the more artificial, materialistic and socially unstable cities."²

One of the more dispassionate spirits in the movement described its rationale in terms which most accurately reflect its core-idea, namely, to promote "the use of foresight and restraint in the exploitation of the physical sources of wealth as necessary for the perpetuity of civilization, and the welfare of present and future generations."³ They preached what S. P. Hay has called "the gospel of efficiency" with a rather specialized non-economic emphasis. This has been described as "an engineering approach to resources . . . with Pinchot and his group [seeking] . . . to substitute orderly, planned resource development . . . stressing [words like] multiple-use, highest use, efficiency and development [as] men of science, not economists."⁴

Over the intervening years these vaguely-conceived ideas have found formal recognition in statements of policy objectives and even in the names of government departments and branches and non-governmental organizations to a point where "conservation" is hardly more than a vapid cliché. Long ago President W. H. Taft could observe

truthfully yet rather caustically, that "there are a great many people in favor of conservation no matter what it means." The substantive triumph of these ideas—that is, their embodiment in action-programs—has been less clear. It could hardly be otherwise when we consider that, as H. J. Barnett puts it, "in terms of ideas, conservation was a wide-ranging assemblage of views concerning all the individual natural resources, economics, political science, public administration, sociology, engineering, art, and public health . . . [that was] rarely consistent in thought or action."⁵ This lack of clarity and consistency in concepts forged in the heat of crusading zeal and under the pressure of opposing vested interests is not surprising; it has, however, been a handicap to the formulation and implementation of resource policies.

The present phase of the same struggle, half a century later, is no less political in the sense of involving what has been called "social engineering" but it no longer takes the form of ram-rod pressure politics. It is now a much more subtle and sophisticated matter. We are less certain of what is "right" and more aware of the complexities in devising effective techniques, let alone defining acceptable goals. But the task though more difficult is no less significant than yesterday and no less talked about. However, the emotional fog is lifting so that the issues can be up-dated and clarified and the approach balanced with the socio-economic dimensions considered as an integral part of the process. In short,

² S. P. Hays, *Conservation and the Gospel of Efficiency* (Cambridge, Massachusetts: University Press, 1959), p. 141-143. This published study is based on his doctoral dissertation, *The First American Conservation Movement, 1890-1920*. In his book Hays devotes a chapter to "The Conservation Crusade" and a section to "Conservation as a Moral Crusade." The author notes however that: "A wide difference in attitude separated Roosevelt, Pinchot and Garfield from the new enthusiasts [who] had little appreciation for national and comprehensive planning. . . . Yet, Pinchot and his friends were forced to cultivate this sentiment [of emotional fervor which they distrusted] to obtain the popular support which they desperately needed. . . . As Pinchot discovered later, this marriage of convenience had its shortcomings." (p. 145).

³ Philip P. Wells, one of Pinchot's collaborators as quoted by S. P. Hays, *op. cit.*, p. 123.

⁴ N. Wengert, *Natural Resources and the Political Struggle, Short Studies in Political Science* (New York, New York: Doubleday & Co., 1955), p. 21.

⁵ H. J. Barnett, *Malthusianism and Conservation—Their Role As Origins of the Doctrine of Increasing Scarcity of Natural Resources, Resources for the Future, Incorporated*, reprint, 1959, p. 19. It was, however, in his opinion "a successful political and social movement . . . not revolutionary in its immediate impact (but) in part of its doctrine and in its eventual influence" (p. 20).

the scope and content of what constitutes resource policy can now be usefully spelled out and translated into action terms to meet today's problems and to anticipate tomorrow's. We seem more prepared to see the subject in a broader and more realistic framework.

Many economists, historians and other social scientists have helped the process of clarification in attempting to conceptualize the loose ends of statements and proposals of the conservation movement into a systematic policy approach consistent in its many parts, and in its scope and goals.⁶ Others have searched for meaningful patterns from the empirical evidence of statements and conduct at many levels of government over many years and regions. Whether articulated or only implied, whether consistent in goals and scope and in its many parts, a survey of United States experience has led one economist to state that the objectives of prevailing resource policy have been "to foster a quantitatively, compositionally, and temporally optimal pattern of resource use" and that the many governments at federal and state levels have been doing this by adopting the

following courses of action: (a) regulation of resource use to eliminate sub-optimal processes of extraction and utilization; (b) promotion of discovery and regeneration, by subsidies, incentive measures and public investment to augment the supply of resources.⁷ He concluded that the performances have fallen far short of the vaguely defined goal of this three-dimensional "optimal pattern of resource use": "They seldom accomplish this purpose [of preserving the usefulness and productivity of public resources] in an optimum or even highly effective manner [and] often foster relatively less productive use of the resources concerned."⁸

It is a moot point whether the concept of the "optimum" provides a meaningful operational goal or a feasible criterion for evaluating the performance of government and industry for only a limited sector and segment of economic activity.⁹ S. V. Ciriacy-Wantrup has written: "Optimizing is not and cannot be an actual policy objective [because] information about [the relevant] variables and relations is insufficient for projecting an optimum expansion path of social welfare over time in a dynamic framework. The actual objective of policy de-

⁶ See A. D. Scott, *Natural Resources: The Economics of Conservation* (Toronto, Canada: University of Toronto Press, 1955), especially ch. 2, "The Meaning of Conservation," where he arrives at a definition through analytic deduction: "Conservation is a public policy which seeks to increase future usable supplies of a natural resource by present actions . . . [such as] by reducing present use or by increasing present restorative investments" (pp. 18, 23). See also S. V. Ciriacy-Wantrup, *Resource Conservation—Economics and Policies* (Berkeley, California: University of California Press, 1952), especially chapter 4, "Meaning of Conservation" where its socio-economic meaning is distinguished from the physical-biological and defined as being "concerned with the *when* of use [and] defined in terms of *changes* in the intertemporal distribution of use . . . in the direction of the future [so as to achieve] an economically optimum distribution of rates of use over time." pp. 51, 58. (Italics in original) See H. J. Barnett, *op. cit.* and S. P. Hays, *op. cit.*, both of whom are critical of the narrowness of these types of definitions.

⁷ J. Bain summarized the wide gamut of prevailing policies in a background paper prepared for the Conference on Natural Resources and Economic Growth, Ann Arbor, Michigan, April 1960. The quote is that of E. M. Hoover, summarizing J. Bain's paper, *Items*, Social Science Research Council, June 1960, p. 15.

⁸ *Items*, *ibid.*, p. 15.

⁹ The concept of the "optimum" for the whole of the economy in terms of welfare (which includes income) has been intensively explored in the economic literature over many years and the judgment of one economist sums up the gist of the debate so far as it is relevant here: "Economic welfare is a subject in which rigour and refinement are probably worse than useless. Rough theory, or good common sense is, in practice, what we require." I. D. M. Little, *A Critique of Welfare Economics* (Oxford, England: Oxford University Press, 1957), p. 279.

cisions involves successive incremental improvements of the existing state of welfare, considering a limited number of alternatives."¹⁰

In essential respects this evaluation seems no less applicable to the Canadian scene where resource policies have often suffered from dubious assumptions based on inadequate analysis, research and statistical data, and on severe limitations of scope and action engendered by conventional habits of thought and imagination, divided jurisdiction and ill-fitting administrative strait-jackets. The result has been that many serious problems that may be considered appropriately within or closely related to the realm of resource policy have been considered outside the scope of its restricted horizons and, accordingly, action on them has suffered in some measure from neglect, inadequacy and misdirection.

It may be helpful, therefore, if the prevailing assumption with respect to the role of natural resources in the process of economic development were subject to some examination to distinguish its

elements of fact from its elements of fantasy and foundationless fears. From this the relevant scope of resource policy can be more clearly discerned and some action implications derived.

The Questionable Resource-Base Assumption

Perhaps the most serious source for the shortcomings of resource policy is the rather seldom-questioned popular belief that resource development is both a necessary and a sufficient condition for economic development.¹¹ This is reflected in the pre-occupation of those responsible for resource policy with the limited and over-simplified goal of maintaining or increasing the resource base of the economy through regulating its rate and manner of exploitation and through investing for its protection from fire and disease, its regeneration, its accessibility, and so forth. The broader objective of such a policy is often expressed as the promotion of the optimal rate and pattern of economic development consistent with the limits of a sustained resource supply. Since the optimum is a nebulous and non-operational concept (as noted above), the supply aspect remains as the only clear-cut element of a complex matter and becomes the overwhelming and virtually exclusive concern of resource agencies and the dominating element of resource policy. And to simplify matters it is usually focused on the physical aspects of supply and is reflected in personnel selection and training as well as in

¹⁰ *Conceptual Problems in Projecting the Demand for Land and Water* (Berkeley, California: University of California, Giannini Foundation Paper No. 176, May 1959), p. 13 (mimeo). The reasons why optimizing cannot be a policy objective are valid in operational terms for a limited sector of the economy but if we broaden scope and include value judgments we must aim to optimize. See P. Baran, "The Commitment of the Intellectual," *Monthly Review*, May 1961, where he elaborates clearly and forcefully the role of the intellectual as one who does not accept "the existing structure of the whole as a datum and subscribes to the prevailing criteria of rationality and the socially enforced yardsticks of efficiency, achievements, and success and who does not withdraw from entering the area of value formation as an ethical neutralist. He faces concrete problems placed on the agenda of society by the tensions, contradictions and changing constellation of the historical process and accepts the challenge to use mankind's accumulated wisdom, knowledge, and experience to attain as close as possible [to] an approximation to what constitutes the best solution under prevailing conditions. What is best involves value judgments, which the intellectual must be concerned about as an analyst and as a citizen."

¹¹ The concept of resource development includes maintenance by foregoing the use of the resources as well as investment to protect and maintain the supply or to increase it by investing in protective measures, regulation, and roads to increase their availability by easier or less costly access. By economic development is meant rising national income (or output) so as to increase per capita real income.

public pronouncements and publications. This natural reaction, when permitted to happen and be tolerated, reflects a deeper failure to understand the relationship of resources to growth and of resource policy to broader developmental policy.

The basic misconception which fosters this situation is the idea that resource development and economic development are identical and this, in turn, is based on the fear that the growth of the economy is being, or will be, inhibited by a lack of natural resources. The misconception is deeply-rooted because, in a generalized way, this fear is tautologically sound. The whole field of economics is often defined by the process of economizing, which implies that there are limited resources in relation to needs or wants. As Hood observed in a rather casual manner in a footnote, "the whole process of growth seems to be accompanied by a continuing substitution of specific bottlenecks of one kind for bottlenecks of another."¹² It could not be otherwise but it is not necessarily true that the supplies (or supply prices) of natural resources as factors of production are now or ever going to be the bottlenecks to growth either in a general or in a particular way. In fact, it is interesting to note the comment by Simon Kuznets in a review of the studies and reports of the Royal Commission on Canada's Economic Prospects, to the effect that: "In rich developed countries, like Canada . . . the economic problems raised by consideration of growth prospects in terms of supply of factors . . . are relatively minor [and] . . . the Commission's en-

quiry . . . reflect [this] as being the true situation."¹³

If it happens to be true that either now or in the future we can pinpoint such actual or incipient bottlenecks, it becomes the better part of wisdom and of policy to direct attention and efforts to this specific area of weakness but it does not follow that the action to be taken need be to increase the supply of the particular resources. It may be wiser yet to make such resources less necessary by developing substitutes. This, however, may not always be possible or desirable, at least in the short run and considering other problems that arise in its wake. But in any case the specifics of the case must be examined and the generalization avoided as a basis for policy.¹⁴

Still, it may be pertinent to examine the assumption of natural resource scarcity and its corollaries—to examine, as Barnett puts it, "the belief that natural resources are scarce and becoming more so . . . [that such] resource scarcity inflicts diminishing returns, in some sense, and that the diminishing returns in some sense impair economic welfare and

¹² "Canada's Economic Prospects—A Review Article," *American Economic Review*, June 1959, p. 382. He makes a significant observation that the studies and reports convey "an impression of a kind of 'problemlessness.'" The Final Report gives the impression that no serious problems exist. . . . There is no systematic comparison of supply with needs of growth with what growth is supposed to serve (p. 381, 382).

¹⁴ The industry studies can provide such a basis for policy. Apropos the Gordon Commission's studies, Kuznets in his review summarizes: "For some sectors, e. g., energy, forest industries, and minerals and mineral processing the question is whether the expected growth in demand can be adequately met out of the resources, usually natural, available in Canada. For others, e.g., agriculture, fisheries, secondary manufacturing, the emphasis is on the possible limits to demand . . . and the problem is one of adjustment of production and employment to these possible limits upon demand." *Ibid.*, p. 368. Forest industries would seem to fall in the second group rather than the first. See also background papers to Resources for Tomorrow Conference (Ottawa, Canada: Queen's Printer, 1961).

¹³ W. Hood and A. Scott, *Output, Labour and Capital in the Canadian Economy*, prepared for the Royal Commission on Canada's Economic Prospects (Ottawa, Canada: Queen's Printer, 1957), p. 97, footnote.

growth."¹⁵ On this basis, the warnings of the conservationists about existing or impending shortages have been disseminated for half a century. Have their dire predictions been vindicated by events?

With retrospect, in *general terms*, it might appear that their Cassandra voices crying doom have been more loud than enlightening, more clichéd than convincing. While in some contexts their performances have made positive contributions, like the boy who cries "wolf," they have more often obscured the cases where their warnings may hold true. Yet this belief in a relatively fixed resource base and impending shortages is so firmly imbedded in the public consciousness and is so basic to resource policy as we know it that an exploration of its meaning and the evidence may be helpful if only to clarify the nature of the problems with which resource policy should contend and thereby to delineate the scope and content of resource policy most appropriate for dealing with real rather than imagined problems.

Firstly. It is conceptually difficult to define the terms "resources" and "resource availability" depending as they do on the interplay of the technological arts and the cultural-economic state of wants and its market expression. Not only are they highly variable but they are immeasurable. R. L. Meier put the dynamic nature of the concept of availability very neatly:

"The peculiar quirk of Nature now labelled as a resource would not be recognized as an opportunity for enrichment were it not for a block of experience shared by specialists that is simply called 'know how'. A resource, it must be remembered, cannot come into being without the prior evaluation of an art or a technology to exploit it. Therefore, the study of changes in the volume of resource availability and use might profitably concentrate upon changes in the *state of knowledge* . . . [which] establishes the boundary between profitable and unprofitable resource concentrations."¹⁶ (*italics added*)

This state of knowledge is an intangible factor reflecting itself in skills and attitudes of the population as well as in a broad range of institutional conditions affecting its growth through education and research, and the like, and its application through scientific-technological innovation. Technology may be described as "the primary resource"¹⁷ and to others the "resource" is more basically the people and their values, behavior patterns, and the institutions which they have erected. Harry B. Johnson would rather regard labor as a produced rather than as an original factor of production for development theory and policy, as does T. W. Schultz.¹⁸ The state of knowledge is a highly dynamic element and it may be pertinent to note Meier's view of its importance to growth: "If I were forced to bet upon only one of the dozens of rapidly progressing fields of inquiry in physics, chemistry, biology, psychology and the other experimental

¹⁵ H. J. Barnett, *Measurement of Change in Natural Resource Economic Scarcity and Its Economic Effects*, revised paper for Conference on Research in Income and Wealth, National Bureau of Economic Research, New York, 1959, p. 1 & 2. He differentiates between *Malthusian scarcity* where the resources are limited, given socio-technical conditions, and *Ricardian scarcity* where there is no limit but their economic qualities decline as more of the resources are used, the depletion effects being felt if the ecological balance is disturbed by use of a single or key resource beyond a certain point where decreasing returns set in.

¹⁶ R. L. Meier, *Information, Resource Use and Economic Growth*, background paper for Conference on Natural Resources and Economic Growth, *op. cit.*, (mimeo) p. 1.

¹⁷ Dewhurst & Associates, Editors, *America's Needs and Resources: A New Survey*, (New York, New York: Twentieth Century Fund, 1956) ch. 24.

¹⁸ See Harry B. Johnson, "The Political Economy of Opulence," *Canadian Journal of Economic and Social Science*, November 1960, p. 563; and T. W. Schultz, "Investment in Human Capital," *American Economic Review*, March 1961.

sciences as the most likely to excite accelerated development in the next generation, I would unhesitatingly choose this field of information measurement and processing."¹⁹ In an article entitled, "Human Capital: A Growing Asset," Schultz writes of how this state of knowledge has increased output. The distinctions between labor, capital and resources grow ever fuzzier.²⁰

The attitude of economists with respect to the ambiguity of natural resources as a factor in the economic process is well exemplified in the treatment accorded "natural resources" in the study for the Royal Commission on Canada's Economic Prospects by Hood and Scott. They state their position quite clearly:

"Natural resources are, from the point of view of the economy, simply a *natural form of capital* [and] may be substituted for man-made capital goods and vice versa . . . Forests like mines, fields and fisheries are governed by the same economic considerations as capital goods and to adopt a special attitude towards their use, disappearance or renewal could be misleading. . . . Economic growth has been characterized by the conversion of much of the original *capital* goods into more useful types of capital goods and into consumption goods . . . A complete study of the growth of a particular economy must review not only changes in the aggregate of resources, the adaptability of each resource for evolving uses, and the availability of substitutes and transportation facilities, but also changes in the stocks of capital goods that are substitutes and complements for resources. Further, since the depletion of resources may be more than offset by the accumulation of goods, methods and ideas, analysis requires balancing in some way the changes in one aggregate against changes in the other, to obtain an idea of the net change in the aggregate productive capacity. Neither data

nor conceptual tools are yet available for this task."²¹

They leave the problem at this stage, in effect abdicating from further pursuit of the question and even from expressing any opinion on whether such pursuit is desirable or, even if difficult, likely to bear any fruit to compensate for the effort.

It is pertinent to note that the concept of natural resources refers to factors which are produced by nature in both an uncontrolled and controlled state and then extracted, harvested or harnessed to be used in the preparation of a marketable product through the use of additional inputs of capital and labor to transport and process them. This concept of natural resources is essentially an economic one which considers them as highly transformable, transferrable and substitutable and defines them primarily in terms of their economic significance in a converted state by virtue of relocation and/or processing. Recently, the distinction has been made between this concept and definition of a natural resource and what has been termed "amenity resources" such as climate, topography and the like.²² These are considered as resources insofar as they play an economic role in terms of influencing movement of people and location of industry.

¹⁹ *Output, Labour and Capital*, Royal Commission on Canada's Economic Prospects, (Ottawa, Ontario: Queen's Printers, 1957), pp. 54-55. They do, however, discuss the influence of natural resources on the capital/output ratio and, at some points, refer to the distinctive attributes of natural resources but only in general terms, noting the aspect of immobility and indivisibility and its regional implications.

²⁰ R. F. Muth, *Regions, Resources and Economic Growth, Resources for the Future* (Baltimore, Maryland: Johns Hopkins Press, 1960); See also background paper by H. S. Perloff and L. Wingo, Jr., *Natural Resources Endowment and Regional Economic Growth*, Conference on Natural Resources and Economic Growth, Ann Arbor, Michigan, April 1960, pp. 10-13.

²¹ *Op. cit.*, p. ii.

²² T. W. Schultz, "Human Capital: A Growing Asset," *Saturday Review*, January 21, 1961, p. 37.

Their economic significance shades off into another realm where their significance is felt through influencing the non-measurable qualitative aspects of living, that is, the *way of life* as distinguished from the *level* or location of living.²³ In a broad sense the same "resources" are important not so much for their economic role as they are for their *environmental* role.²⁴ It is impossible to relate this latter type of natural resource to output and the measurable indices of growth in an analytically rigorous way. The environmental resources cannot be subsumed under their effects on labor and capital productivity since their contribution to overall welfare is essentially qualitative and virtually autonomous.

The more significant distinction to be noted in terms of their different roles in the process of socio-economic growth is revealed by the effect of our "state of

knowledge" on their supply and use. The danger and problem of shortage in a physical and in an economic sense may be much greater for these environmental resources since the process of substitution is ruled out or very severely limited. In fact, technology can have only an indirect effect and its influence on the end-product to be enjoyed is likely to increase the pressures of demand and need for the resources.²⁵ Perhaps the "conservationist" and the "economist" (in the narrow sense) are talking of different things and unfortunately (for clear understanding, policy and action) using the identical words. It seems, in a rough sort of way, that each has selected different problem areas and defined the meaning of "resource" accordingly, one abstracting analytically from the distinctive problems of resources supply, the other focussing on them almost to an obsessive degree.

Secondly. The truth or fallacy of the assumption of a fixed or relatively limited supply of natural resources in its economic role is very difficult to check against the evidence—while in terms of environment it is a blatantly obvious fact and poses critical problems. Apropos natural resources as an economic factor, H. J. Barnett has observed:

"The propositions [about resource scarcity] are not factual ones, but hypotheses. . . . [These] concepts [of scarcity] are not simple and straight forward and I don't know whether they are true . . . [There is] no empirical proof in the literature and because of the ambiguities and complexities in the 'simple' view of natural resource scarcity and effect, empirical testing is rendered quite difficult, more from uncertainty as to

²³ J. J. Spengler refers to the important services that natural resources make to "the content and the augmentation of social welfare indices," an expression that sums up, in a term, the whole gamut of unique irreplaceable services that the environmental attributes of some natural resources contribute to our *way of life*. He complains that the "amenity resources" as Perloff and his colleagues have used (they coined the term) are considered as partial derivatives of location and in their locational theory, "as partial determinants of location." He feels, as I do, that they may be as significant or even more significant "as components of GNP or of 'welfare.'" J. J. Spengler, *Summary and Synthesis*, Conference on Natural Resources and Economic Growth, Ann Arbor, Michigan, April 1960, p. 9 and 10 (mimeo).

²⁴ Embraced within this environmental concept is the *ecological* aspect where a resource is valued in terms of its contribution to the environment where it plays a part in nature's "seamless web" as for example, forests for watershed control. This can also have an economic dimension in the sense of the external diseconomies that ensue from the removal of such trees by way of flooding or unregulated flow or the external economies ensuing from the benefit they provide in making it unnecessary to invest more in flood control measures. For a rather extended treatment of this "externality" aspect see E. S. Mason, "The Political Economy of Resource Uses," *Perspectives on Conservation: Essays On America's Natural Resources*, Resources for the Future.

²⁵ Like some transport and communication innovations which extend awareness and accessibility and intensify the use of parks and wilderness area. Television has the opposite effect except so far as it may induce a change of taste and appreciation for nature.

what should be tested than from how to do it."²⁶

The matter is beset with conceptual difficulties which are best reflected in the case of land as an "economic resource" (leaving to one side the land which plays a role as an "environmental resource"). There is firstly a problem in definition; and secondly, no price or productivity basis to refer to for analytical or statistical evidence. *There is no industry from which to derive the supply of land* (except in the limited sense of land reclamation activities) while the demand for land is only derived from agricultural and other "industries" which are of a highly diversified nature and from which no general price or productivity data can be usefully averaged out. Only in part do the competitive demands by alternate users for different uses set the price for land and, in any case, this price is not a reflector of the supply-demand situation.²⁷ We can infer a *shortage* or a *surplus* of land only in terms of specific locational and quality characteristics determined as much by deliberate government action as by the market place.²⁸

There is, in Ciriacy-Wantrup's view, little significance to the "quantitative

projections of the losses of land by agriculture to urban-industrial development . . . [from which] the losses in food and fiber production are predicted."²⁹ The problem is not in terms of land "shortage" but in terms of the *manner* of land development:

"The need [for policy measures] is created rather by the fact that re-allocation of land between agriculture and urban-industrial development proceeds, at present, in a *haphazard, leapfrogging manner* involving high costs both to agriculture passed over in the leapfrogging and to the resulting sprawled-out urban communities."³⁰ (emphasis added)

This brings us back from the economic to the environmental role where reference to the manner of use in relation to socio-cultural values provides the most

basis for policy measures. The objective is not to optimize the use of land but to prevent a scarce resource from being used in an "inferior" way in a particular context. "The actual objective of policy decisions involves successive incremental improvements of the existing state of welfare, considering a limited number of alternatives." Ciriacy-Wantrup, *ibid.*, p. 13.

"Some of the most important decisions in modern land and water policy are of a kind which, as their predictive basis, do not require a high degree of quantification. Stated positively, significant policy decisions are concerned with successive incremental improvements in social welfare that can be projected only in terms of direction of changes, their relative speed, and their sequence in time" (p. 11). He notes the significance for policy of direction, speed and sequence as between "circular cumulative systems" and "corrective systems."

Mr. Wantrup concludes from his analysis of agricultural land prices (no other usable price data for land being available or usable) that the "corrective" influence of technological inputs into agriculture has influenced the demand and price of land so as to "inject a tempering note into the optimistic or pessimistic projections of land 'scarcity' and its implications for policy decisions" (p. 25).

²⁹ In some regions urban expansion may well be directed towards alternatively available land that is topographically unsuited for agriculture. But the transfer of irrigated land to urban-industrial developments does not, in itself, create the need for policy measures. *Ibid.*, p. 15.

³⁰ *Ibid.*, p. 15. To meet this situation he suggests "several measures of land policy, mainly in the fields of taxation and zoning, by which these costs can be reduced through temporarily retarding alloca-

²⁶ H. J. Barnett, *Measurement of Change in Natural Resources, Economic Scarcity and Its Economic Effects*, for Conference on Research and Wealth, October 1958, National Bureau of Economic Research, New York, p. 1 (mimeo). Barnett has attempted to check the hypotheses through a perusal of price and productivity trends for some major resources. (We shall refer later to his statistical findings).

²⁷ The treatment of this subject is well elaborated in a paper by S. V. Ciriacy-Wantrup, *Conceptual Problems in Projecting the Demand for Land and Water*, University of California, Berkeley, Giannini Foundation Paper, No. 176, May 1959, see p. 4 and 5. He points out that regulations and direct controls usually condition the disposition of some land especially in or near urban centers, roadways and waterways and where speculative activity is rampant, unstable psychological factors may be reflected in the prices for land.

²⁸ In any case, the scarcity or abundance of land in a general sense, does not provide an adequate

relevant guide to policy with respect to resource use.

Thirdly. Notwithstanding the conceptual difficulties in defining the resource base, it seems reasonably clear as a *general* trend that, over time, there are grounds for believing that the economic role of natural resources diminishes as the economy grows.

The analytic rationale for this is well expressed by C. Morse and H. J. Barnett:

"A decline in the *relative* importance of natural resources in a country's income-producing assets [are brought on by] two sorts of changes: (1) as per capita income rises the marginal propensity to consume the services of most, if not all, natural resources eventually falls; (2) the composite input of labor and capital per unit of output of resources may either fall or at least not increase enough to offset the diminution in input of resources per unit of output."³¹

In a paper discussing the relationship of natural resources to economic development, John H. Adler observes:

"Virtually all stages [of development] sequences proposed by economists and economic historians reveal, either explicitly or by direct implication, the growing independence of economic activity from a specific localized resource base. . . . [as] the ends of economic activity change, becoming

tion of land in some areas and accelerating it in others. . . . Projections of land losses by agriculture and of economic optima in land allocation at particular instants are not relevant for these policy decisions." As for land where wild land and agriculture compete he also rejects the projections of land use and allocational optima. "The approaches and tools of institutional economics, with particular emphasis on tenure, taxation and credit can be effectively applied without projections." (p. 16) The social losses merely ensue from expansion and contraction of agriculture on the wild-land margin and such measures would be directed against this resource depleting practice.

³¹ *A Theoretic Analysis of Natural Resource Scarcity and Economic Growth (under Strict Parametric Constraints)*, background paper for the Conference on Natural Resources and Economic Growth, Ann Arbor, Michigan, April 1960. Quotation from E. Hoover, *Items*, Social Science Research Council, Vol. 14, No. 2, June, 1960, p. 14.

more and more non-material lead[ing] to a decline in the demand for inputs of material resources . . . [and as] the 'gifts of nature'—soil, fertility, minerals, climate, location and whatever other facet of resources one may think of—are being increasingly supplemented by inputs of other factors through the improvements in the use of resources, and inventions leading to the use of new resources for which no use or only 'inferior' uses was known before."³²

Empiric evidence is the basis for the analysis. As a general observation, it has been noted by an eminent economist that: "Moving from low- to high-income countries or from an earlier to a later state of development of a given country, the ratio of natural resources to all resources employed in income production falls from a high [say 20–25%] to a low [say 5% or less]."³³

Citing United States data, C. P. Kindleburger in his book, *The Terms of Trade*, gives a dramatic illustration of this trend. He notes the statistical evidence that, while per capita income rose 150 percent between 1900 and 1950, the consumption of raw materials rose by only 25 percent and within this 25 percent rise he notes the case of forest products, the consumption of which declined by half as substitute materials displaced them in many areas of economic life.

Investigating this hypothesis on the basis of United States data from 1870–1956, H. J. Barnett finds the *prima facie* evidence for such shortages not too apparent. After marshalling a rough set of statistical data he concludes that relative

³² *Changes in the Role of Resources at Different Stages of Economic Development*, background paper for the Conference on Natural Resources and Economic Growth, Ann Arbor, Michigan, April 1960, pp. 4, 5.

³³ E. M. Hoover, *Items*, *op. cit.* p. 14, paraphrasing T. W. Schultz in his paper, *A General View of Natural Resources in Economic Growth*, presented at the same conference.

prices and labor productivity indicators do not support hypotheses of shortages for agriculture, mining, fishing, nor for all extractive industries. Only in the case of forestry products does he find any suggestion of "shortage" defined in terms of relatively rising prices.³⁴

For Canada the evidence would likely be similar, given the close interdependence of our economies. The time series data on which Canadian evidence must depend is rather sparse and spotty but merits study. The prices and productivity statistical series do not go back far enough with sufficient depth to establish a long-term trend to make a definitive statistical case. However, we may be helped by the group of scholars who are currently at work in compiling an *Historical Statistics of Canada*³⁵ and by the work of O. J. Firestone³⁶ which endeavors to bring the statistical data back to the period of Confederation.

³⁴ See p. 29 of his paper, *Measurement of Change in Natural Resource Scarcity and Its Economic Effects*, op. cit. It is relevant to note the comments of J. H. Adler on this analysis: "It does not follow from Barnett's findings, which I find to be unassailable, that the availability of natural resources in various degrees of abundance is not an important factor determining the pace of economic advancement and perhaps beyond that, whether an economy can have any sustained economic growth at all." Op. cit., p. 7.

³⁵ Due to be published late in the fall of 1961, this volume was proposed by the Statistical Committee of the Canadian Political Science Association and is being sponsored by the Canadian Social Science Research Council in conjunction with the Canadian Political Science Association. It is being edited by M. C. Urquhart and K. A. H. Buckley. Sections on lands and forests, agriculture, fisheries, minerals and petroleum, energy and prices are being prepared by G. K. Goundrey, D. L. MacFarlane, H. S. Gordon, J. Davis, and A. Asimakopulos, respectively. It is analogous to the *Historical Statistics of the U. S.*, *Colonial Times to 1957*, prepared by the United States Bureau of the Census with the assistance of the Advisory Committee on Historical Statistics, Washington, D. C., 1960.

³⁶ *Canada's Economic Development 1867-1953*, Income and Wealth Series VII (London, England: Bowes & Bowes, 1958). See esp., Sect. 8 and 10 of Part II and for an historical review of statistical developments, Part IV. The data are not detailed

The Nature of the Resources Role in Economic Growth

In the light of the analytical and empirical difficulties of the question and the evident trends, it is not surprising to find that professional economists generally take the position that the role of natural resources in our process of economic development is not worth deliberate attention as a limiting factor. With few exceptions we find natural resources treated as lightly as do Hood and Scott in their study for the Royal Commission.³⁷ Even a survey of world literature, let alone that pertaining to Canada, would yield meager dividends in turning up any studies dealing with the relationship of natural resources to the process of economic development either for a nation or a region in the context of a particular geographic setting. There are scarcely any studies now which concern themselves with economic analysis pertaining to resources in general or of some

enough from which to infer the role of the resource component in various industries, especially over a long span of time when techniques have changed greatly. Yet, to cite some salient figures for some primary industries may give a rough sense of trend.

Tables 67 and 68 on pages 188 and 189 indicate the substantial relative contribution of three industries on the basis of "value added" by them: from 1870 to 1953 agriculture's contribution fell from 33% to 9.9%, forest operations from 9.6% to 1.7%, fishing and trapping from 1.1% to 0.3%. Assuming that the relative role of capital in all three fields rose over this period the relative decline of the resource input is even greater than these figures indicate. For example, while the "value added" by agriculture (in constant dollars) rose by over 300% from 1870 to 1950, the value added per acre of farm land dropped by about 14% in the same period (as derived from Table 73, p. 199).

³⁷ See footnote 21. In analytic terms both Hood and Scott give natural resources a subordinate role but they take a position which, in fact, gives it a primary place in Canadian economic life both present and future. "Nature has not been niggardly. Canada possesses in abundance an array of resources that are now in great demand and are likely to remain so. . . . Canadians, on this account alone, are, and may expect to be highly productive." (p. 315, 319). But they do not dispute the trend. Their projections indicate rising productiv-

in particular or which discuss the techniques of measurement and evaluation of resources with respect to determining their economic availability.³⁸ As one author notes after surveying the bibliography on the subject:

"Our survey of contemporary research reveals that the question of material resources in its widest implications is a subject where professional economists are the most reticent. . . . [though] the general relationship of resources and growth seems to offer promising possibilities for professional deliberations No generally accepted method of evaluating the economic availability of resources exists and most economic textbooks do not even deal with such an interpretation."³⁹

The pre-occupation of the classical economists with land (as an all-embracing category for natural resources) in the process of growth has swung a long way around. While we are again pre-occupied with growth in our writings, as were the classical economists, the prevailing current is virtually to ignore the role of resources. Some quotes would indicate the current views: "A perusal of the treatises and textbooks on economic development indicates that their authors do not consider a particular level or composition of resource endowment an essential

pre-requisite of economic development."⁴⁰ "No origin [of resource development policy] is to be found in economic theory. The policy of conservation is the work of foresters, agronomists and engineers; natural resources have seldom attracted the attention of economists."⁴¹

Many reasons can be advanced for this.

(1) Firstly, there are those who "almost [as] a matter of faith assert that there are no limits to technical substitutability of factors."⁴² At one extreme of the spectrum of expectations stands a knowledgeable person such as R. T. Moore of the Rand Corporation who asserts that "economic growth will not be limited by a shortage of natural resources." He is backed by another authority from the scientific community who notes that: "chemical technology is a powerful extender of the resource base."⁴³ It is vital to find out just how far the resource base

³⁸ J. H. Adler, *Changes in The Role of Resources At Different Stages Of Economic Development*, Conference on Natural Resources and Economic Growth, Ann Arbor, Michigan, April 1960, p. 8 (mimeo). He cites, among others, the following: W. A. Lewis, *The Theory of Economic Growth*; N. S. Buchanan and H. S. Ellis, *Approaches to Economic Development* (where natural resources are accorded only a footnote reference: ". . . the existence of natural resources is not a necessary prior condition to development," p. 4 footnote 1); and W. W. Rostow, *Stages in Economic Growth*, where only some passing reference is made.

³⁹ C. Wilcox, "From Economic Theory to Public Policy," *American Economic Review*, Papers and Proceedings, May 1960, p. 29. He cites the need for "more theoretic underpinning to the policies of development and growth."

⁴⁰ R. Eckaus, "The Factor Proportions Problem in Underdeveloped Areas," *American Economic Review*, Papers and Proceedings, May 1960, p. 644. He adds that "if we are interested in creating only efficient processes it is not possible to settle this issue a priori."

⁴¹ E. L. Stevenson, "Past Gains and Future Promise," *ibid.*, p. 116. He speaks of "molecular engineering" which is a phrase for the techniques for constructing new materials with desired properties from a wide range of materials and processes. It is basis for the era of synthetics which is in the offing on a scale unimagined. Also, see F. T. Moore, "Unlocking Land Resources," *Science and Resources* (Baltimore, Maryland: Johns Hopkins Press and Resources for the Future, 1959) p. 138.

ity in the resource industries as a leading sector in the economic growth pattern, from which we can infer that the labor and resource inputs are becoming smaller relative to capital and that the rise in productivity of labor and resources can be attributed to capital and its technological expression in new plant and techniques of production, transportation and marketing. But it may also be due in some measure to the monopolistic conditions which favor appropriate economies of scale in those industries.

⁴² The political, legislative, organizational and sociological aspects directly relevant to resource development policies and problems are being given relatively more consideration by social scientists, including economists.

⁴³ J. H. Ahmed, *National Resources in Low Income Countries—An Analytic Survey of Socio-Economic Research* (Pittsburgh, Pennsylvania: University of Pittsburgh Press, 1960), p. xviii.

can be extended and in what directions, and for what uses. Meanwhile, we might be cautioned by the observation of R. L. Meier who notes some limiting factors in this process and draws more tentative conclusions. He writes:

"Critical problems of supply, which threatened to limit world development in the recent past have often been solved by the introduction of new technology arising from scientific research. A review of the outcome of these crises—electric power and light, fixed nitrogen, mechanized agriculture, synthetic rubber, light metals for air transport, and tele-communications are good examples—shows that practically all were overcome by applying massive quantities of power in connection with the new technology. Thus the demands for power have pyramided so rapidly that they have made imminent a more nearly fundamental crisis which comes to a climax when present energy sources give out. The old formula of wedding a new idea to more energy is no longer dependable. The world will need now a new set of inventions which manage to fill human needs with a reduced expenditure of energy or will make possible the tapping of the more expensive and long-lasting resources, such as sunlight and nuclear energy. Contemporary research is only beginning to be directed to these ends."⁴³

Resource policy is concerned with where and how such research should be directed in its responsibilities to stave off the possibilities of resource bottlenecks to growth. Until now, however, the technological successes have been remarkable. In a paper entitled, "Condi-

tions and Rates of Economic Growth," H. S. Ellis has noted the optimistic trend in these words: "The current scene seems to be imbued with optimism regarding the efficacy of improved genetic and extractive techniques to offset diminishing returns . . . [and] technological improvement supplies contemporary theories of development with their most important single element."⁴⁵

The role of resources is relegated to a backseat as technology assumes a key role as a "primary resource."⁴⁶ On occasion the dynamic interrelationship between resources and technology is explored and the suggestion put forth that present or impending resource shortages (as reflected in high prices for scarce resource factors) impel resource-saving, scientific-technological innovations in the laboratory, the factory, and the field.

(2) Secondly, this type of cause-and-effect relationship is interwoven with the whole fabric of institutional establishments, attitudes and processes which are often considered as the more important

⁴³ *Journal of Farm Economics*, 1955. See also H. J. Barnett, *op. cit.*; E. Zimmerman, *World Resources and Industries* (New York, New York: Harper Bros., 1950), esp. Ch. 50; and A. D. Hirshman, "Primary Products and Substitution," *Kyklos*, Vol. XII, 1959.

⁴⁴ J. F. Dewhurst and Associates, Editors, *America's Needs and Resources: A New Survey* (New York, New York: Twentieth Century Fund, 1955), "All the material resources, whether natural or man-made, are the fruits of technology. Technology, in fact, can be thought of as the primary resource; without it all other resources would be economically non-existent. . . . All the raw materials we obtain from the earth, the forests and the oceans . . . are potential resources. They become actual resources only as technology makes it possible to extract them and convert them into useful products." (p. 834) The last sentence of the book concludes: "Technology is our primary and inexhaustible resource." (p. 943)

⁴⁵ R. A. Solo puts forth a case for "creative technology" as a prime factor in development: "Creative Technology and Economic Growth," *International Development Review*, February 1961. T. Schultz places emphasis on investment in human as a form of capital which leads to increasing productivity and development. "Investment in Human Capital," *American Economic Review*, March 1961.

⁴⁶ R. L. Meier, *Information, Resource Use and Economic Growth*, background paper for Conference on Natural Resources and Economic Growth, Ann Arbor, Michigan, April 1960, mimeo, p. 30, 31. He adds on another occasion, a cautious appraisal: "Not even the most optimistic interpretation of our present knowledge—scientific, technological, social and economic—suggests a clear-cut transition path to adequate living for all people. Faith in the feasibility of such an objective must go beyond the facts as they stand at the moment." *Science and Economic Development: New Patterns of Living* (New York, New York: Technology Press, 1956), p. viii.

and over-riding factor in the scheme of things. Accordingly, for those who emphasize this complexity and its intangibles, there is little to say about natural resources as such. They believe that, as one economist puts it, "the *causa causas* of economic development [is] a non-economic phenomenon."⁴⁷

In his paper on stages of growth and the role of resources, J. H. Adler summed up this attitude about the role of natural resources when he said:

"The complex process of development is sometimes influenced but never decisively swayed by resources. Whatever the primary forces determining the speed and direction of growth may be, it would be wrong to include natural resources among them. And it would be even more wrong today than it would have been a hundred years ago."⁴⁸

In his opinion, this position stems from the view that the role of resources in relation to economic growth is, as he put it, "a passive function, the *object* of improvements rather than as the vehicle of development." He feels that this "explains the apparent conflict between the subordinate role which the literature attributes to resources in general and the importance which in specific instances

and concrete situations is given to the resource endowment of an economy."⁴⁹

What is of particular importance for us to note here with respect to "resources development" as a part of development policy is simply this: Resources endowment and the development of these resources through discovery and management and investment for making them more accessible or faster-growing, and so forth, is one of many *means* by which we can develop the whole economy; and its call on labor and capital must be judged in terms of its influence on the rate and the pattern of growth in relation to other alternatives. Canada's early history may be a case in point, as may some under-developed countries today where resource development and economic development go hand in hand. But at this juncture, for Canada, "resource development" is not identical with, nor need be even necessarily in accord with a policy for over-all economic development.

All this is not to argue that resource endowment is not important for influencing the form and pace of development. Nor that resources must not be counted, catalogued, discovered and most efficiently managed and utilized. However, it does point out that resource policy must be concerned with more than this single-minded preoccupation with supply to play a consistent role in an overall development policy. This is not to deny the perennial need for considering the supply of some natural re-

⁴⁷ A. V. Hirschman, commenting on paper by E. E. Hagen, "Turning Parameters into Variables In The Theory of Economic Growth," *American Economic Review, Papers and Proceedings*, May 1960, p. 654. W. A. Lewis and others who place great emphasis on the creativity and drive of people would fall into this school in large measure. Discussing the subject of economic growth and development in his paper, "Conditions and Rates of Economic Growth," Ellis observes, after reviewing the cases of Japan after 1868, Germany after 1870, and Russia after 1917 and citing Australia, New Zealand and South Africa: "In all cases one is probably on safe ground in attributing to the nexus of non-economic factors in the aggregate an importance that equals or transcends that of the economic factors in the aggregate." *op. cit.*

⁴⁸ J. H. Adler, *Changes in the Role of Resources At Different Stages of Economic Development*, Conference on Natural Resources and Economic Growth, Ann Arbor, Michigan, April 1960, mimeo, p. 8.

⁴⁹ *Ibid.*, p. 12. He goes on to note: "There is hardly a survey report on an under-developed country [and Canada may be, in some sense, categorized as one], or any other document prepared as a basis for policy advice and guidance, which does not emphasize the importance of existing resources [and frequently the importance of determining the availability of resources through geological survey, soil test, etc.] and make recommendations for their improved utilization."

sources as vital under certain circumstances where their *specific* contribution is important. This would apply to the "amenity resources" which plan an environmental-ecological role and which are irreplaceable (essentially in their present form) and to the other natural resources which, in terms of specific attributes of location and quality, are either irreplaceable or only so at appreciably higher costs.

The Pressing Aspect of Resource Supply Problem

As our technological and institutional knowledge and control over our economy expands and as the economy itself expands, becoming "richer" and "better" in both financial and human terms, it is likely that the constraints imposed by the form and location of our natural resources becomes less severe due to their diminishing *relative* importance. It may well be true that the influences of the *original* locations of natural resources may be diminishing over time with changes in industrial and transportation technology, with advertisement-molded markets and rising and greater discretionary income levels and with shifting social values and activities. Our range of choice may be widened and more directed to minimize the need for any or all of our resources. But it is nonetheless likely that our resource endowment in its many forms and geographic distribution has and will continue to condition the pattern, if not the pace, of the country's development. This will apply especially to the types and locations of industries and settlements we develop.

To date the original location of resources has left an indelible pattern in the fabric of our development and this can be only slowly modified. As J. J. Spengler has aptly observed: "A commu-

nity seldom locates itself on its 'possibility frontier' [but adjusts] to the situation in which it finds itself."⁵⁰

Our problem is not to attain an idealized optimum but to move from where we are in the direction we want to go and at a speed and in a manner of our socially-determined choosing. Whatever the configuration of the distant idealized "possibility frontier" towards which we may strive, we must, in the short-run, keep our feet both literally and figuratively on the ground and face the present and imminent facts of life. Among them is the problem—or complex of problems—relating to the provision of an adequate supply of land and water in *qualitative* terms.

The forces of "push and pull"⁵¹ or other factors of a socio-psychological nature set an almost implacable face on things. The trend towards urbanization is pronounced and very deep-set. It is difficult even to formulate a desire let alone devise a means for altering the pace of this movement. It is, in terms of any significance, a long-range matter for a distant tomorrow. As our economy grows at its present pace and in its present pattern, household and industrial water usage in urban centers grows at a rapid rate, the cumulative pollution of water and air poses a more intractable problem

⁵⁰ J. J. Spengler, *Summary and Synthesis*, Conference on Natural Resources and Economic Growth, Ann Arbor, Michigan, April 1960, mimeo, p. 4.

⁵¹ The influence of income and employment opportunities in a positive or negative sense "may be clarified by the convenient distinction between 'push' and 'pull' factors influencing movement. An improvement in incomes and employment opportunities outside agriculture may be regarded as strengthening the 'pull' factors while [their] deterioration . . . in agriculture represents a strengthening of the 'push' factors. Social conditions also act as push factors." *Why Labour Leaves the Land—A Comparative Study of the Movement of Labour Out of Agriculture* (Geneva, Switzerland: International Labor Organization, 1960), Series and Reports New Series, No. 59, p. 17.

and the haphazard occupation of land manifest in the phenomenon called "urban sprawl" and "megapolis" becomes more and more unmanageable and irreversible.⁵²

These are problems about the supply of land and water which call for imaginative, bold measures to meet them in the immediate short run, and on a planned comprehensive well-integrated basis to meet them over the span of years ahead. To some extent—though hardly encouraging when viewed in relation to the magnitude of the problems—the more flagrant examples of "wasteful" uses have been observed, studied and, in some measure, been acted upon by resource policy. The concern and efforts with respect to water and air pollution and the remarkable strides in adopting, belatedly but vigorously, the institution of "urban planning" could be cited. But it is not perhaps unkind to note that the traditional techniques of restriction by regulation have been relied on in the main. Only somewhat lately and, as yet weakly, have these efforts been supplemented by public investment in research and by taking effective action through investment in promoting the installation of equipment which existing knowledge already reveals as helpful.⁵³ Significant steps toward regional planning are only now being considered.⁵⁴

An example from the United States might be cited to indicate the difficulty

of breaking out of the shell of conventional attitudes towards these problems. A *New York Times* news item (April 16, 1961, p. 60) is self-explanatory even for those who cannot think in terms of billions apart from missile launchings:

"Conversion of the ocean's salt water to fresh is considered by many experts to be the only ultimate answer to the country's growing water shortages. . . . Since 1952 the government has had a formal program aimed at economically converting saline water. . . . Officials of the Department of the Interior say that [while] no sensational breakthroughs are likely for at least the next few years under the program's present pace, progress is being made 'despite a research and development budget which is just about the same as that ear-marked for running the Washington Zoo.' President Kennedy has promised new action and has urged Congress to double appropriations for saline water research and construction."

Under the circumstances, it might be too much to expect a more imaginative approach to resource policy in influencing the broad pattern and manner of development which is characterized by a burgeoning urban growth and which presents unprecedented problems of "external diseconomies" of population and industrial concentration.⁵⁵

Writers such as Lewis Mumford have long predicted and are still predicting

regional planning on a significant scale. L. O. Gerrier, "Regional Planning and Development," background paper for the Resources for Tomorrow Conference, Montreal, Canada: 1961, discusses the broader regional planning implications when the urban centers provide the focal points for the regional planning. D. W. Slater in his paper for the same Conference, "Trends in Industrial Location in Canada," outlines the broad economic forces and patterns which he feels are not likely to be influenced by government policy. He expresses "grave doubts about the abilities of governments to follow sensible policies . . . to encourage the desired pattern of industrial location."

⁵⁵ These "external diseconomies" are matched by economies of a similar nature which give impetus to such concentration. The concept of "external" is meant to suggest that there are benefits (economies) or disadvantages (diseconomies) which accrue to a

⁵² L. Gulick, "The City's Challenge in Resource Use," *Perspectives On Conservation*, *op. cit.*, p. 123, 127.

⁵³ In some Canadian communities, the innovation of the "atomic-suspension" water pollution device, in its research, in its development and in its application indicates a promising departure from the traditional regulation techniques to which resource policy has been largely bound. In all phases, the federal government has shown a dynamic approach to this problem through subsidy.

⁵⁴ The TVA still stands as the only major example on the North American continent of integrated

the catastrophic degeneration of our way of life if the urbanization continues at its present pace and pattern.⁵⁶ One commentator, reviewing Mumford's latest book is moved to pose the question, "How Civilized Can Urban Man Be?" and to speculate on the fate of cities and of men as the forces at work destroy the dwellers of cities: "After megalopolis the final Spenglerian stages of cultural disintegration are Tyrannopolis, the city of parasitic Caesarism, and Necropolis, the city of death."⁵⁷ It is a gloomy prognosis, almost at the other end of the prediction spectrum from Mr. Moore (quoted earlier). Our optimism as fanned by the wind of scientific-technological change must be tempered by the philosophic view and the value-judgments associated with the *manner* and *direction* of change.⁵⁸

society or a part of society from the actions of individuals who, in turn gain or suffer little or no profit or loss from these effects of their decisions; that is, the effects are "external" to their calculations but not external from the wider viewpoint of society. Problems of air and water pollution, traffic congestion and noise and general environmental deterioration with haphazard growth are of this type. For an excellent treatment of this, see E. J. Mishan, "The Meaning of Efficiency," *Banker's Magazine*, London, England, June 1960; also E. S. Mason, *Perspectives on Conservation: Essays on America's Natural Resources*, Resources for the Future, p. 171-177.

⁵⁶ See Lewis Mumford, *The Culture of Cities* (1938) and his latest book (1961) *The City in History: Its Origins, Its Transformations and Its Prospects*. In the opinion of R. L. Meier the problems of waste disposal and water supply "are likely to set limits to the extent of continuous urbanism. . . . As the city grows the costs will be determined less by the technology employed and more and more by local topography and climate." (See *Science and Economic Development*, op. cit., p. 174, 175 and esp. ch. 4, Section 3, "Characteristics of New Urbanization," pp. 170-184).

⁵⁷ Allan Temko, *The New York Times Book Review* (Section 7), April 16, 1961, p. 1. He notes that, in his earlier book, *The Culture of Cities*, Mumford proposed the establishment of "a regional 'bio-technic' order which would renew mankind's association with the natural world."

⁵⁸ In speaking on the subject of environment, Alan Jarvis, former Director of the National Art Gallery and now editor of the magazine, *Canadian Art*, had some pertinent remarks to make: "I sometimes

The upshot of these views is simply this: the most important services that natural resources can make are often to "the content and the augmentation of social welfare indices" to use an expression of J. J. Spengler that sums up, in a term, the whole gamut of unique, irreplaceable services that the environmental attributes of some natural resources contribute to our way of life.⁵⁹ As he observes, these types of resources may be significant not just as contributors to income but even more "as components of GNP or of 'welfare.'" This developmental role of what we have called "environmental ecological resources" cannot therefore be rated solely by its contribution to Gross National Product which, in any case, would be difficult to measure. Its contribution is more in terms of the intangible and immeasurable qualitative aspects and is reflected in the *type* of society and *way* of life we achieve which is more a matter of form than of size.

The Demand Problem of Resource Policy

The foremost failing of traditional resource policy can be said to be its acts of

wonder if we aren't becoming a nation of Gross National People chained by thoughtlessness and greed to that progress measured so well and so often by the Gross National Product. I submit that some of the things we are doing to this nation today (defacing landscape, polluting the air and water, sprawling our cities in a haphazard fashion, and so forth) are perversions of the most basic rights of man (and the constraints of nature). We are not Lords of the earth—we can only co-exist with what we find here—the land, the water and other living creatures. . . . [We must] stop talking to the pocket-books of the Gross National People and start talking sense."

⁵⁹ J. J. Spengler, *Summary and Synthesis*, Conference on Natural Resources and Economic Growth, Ann Arbor, Michigan, April 1960, *Resources for the Future*, (mimeo) p. 9 & 10. He complains that the "amenity resources" as Perloff and his colleagues have used them (they coined the term) are only considered by them as partial derivatives of location and, in their locational theory, "as partial determinants of location." They are much more significant in his view—and mine.

omission rather than commission. In part it stems from lack of imaginative boldness on a scale commensurate to the problems at hand (as in the case of urban growth). The problems are recognized and considered relevant but the piecemeal ad hoc manner limits appropriately vigorous action. There is, however, another area that suffers because of a lack of perception that it exists or that it is relevant. This weakness can be said to stem from a lack of vision or from a self-imposed restriction of scope and techniques. Galbraith calls it "selective myopia" as it refers to our neglect of policy measures which might influence our present patterns of resource consumption. Rather trenchantly he comments, "if conservation is an issue . . . there is no justification for ruling consumption levels out of the calculation."⁶⁰

A. M. Hauser, a sociologist-demographer-statistician, has emphatically endorsed this view in stating: "Galbraith put the proper questions, and provided the rational answers . . . [in arguing that] . . . you cannot be both a conservationist and [allow] the freedom of unrestrained appetite."⁶¹ Another strong endorsement comes from the famous ecologist, Paul B. Sears, who noted that Galbraith's emphasis on consumption patterns:

"opens up one of the least popular aspects of the resource problem—namely, the importance of a reasonable frugality . . . [involving] a moral decision . . . for a greater measure of self-restraint and discipline in the use of resources [and attainment] of the rich satisfactions that are possible under a less wildly consumptive economy . . . He [Galbraith] has suggested a doctrine so old

and out of fashion that it has all the merits of novelty, [namely] that we work on the denominator of the supply/demand ratio by beginning to face realistically the possibility of lessening our present dizzy rate of consumption. If ever I heard a subversive idea, this is it. And if ever I welcomed one, this is the occasion."⁶²

One writer has characterized this aspect of the resource problems as:

"a trackless wilderness into which the planner or policy-maker ventures at great risk, for it involves questions about waste, real costs and real values, hidden costs, public interest as against self-gratification, conspicuous consumption, visions of the good life, keeping up with the Joneses, advertising, salesmanship, and a host of other aspects of our culture [which] vitally affect consumption patterns."⁶³

Yet for all its difficulties, this aspect is essentially and vitally relevant to resource policy.

The neglect of our behavior as consumers and the reluctance to use planning techniques is excused or sanctified as a necessary or justifiable sacrifice to the Gods of "Growth and Freedom."⁶⁴ Playing the role of a "Pinchot" from a

⁶⁰ *Op. cit.*, "Ethics, Aesthetics and the Balance of Nature," p. 106, 107, 109.

⁶¹ N. Wengert, *op. cit.*, p. 37. On page 38 he offers an "over-simplified example" in citing the necessity of the lavish use of pulpwood for paper which is devoted to advertising, large-size newspapers, comic books and pulp magazines. Would reductions in these types of use of wood reduce our living standards? Mr. Wengert thinks not, nor do Galbraith and many others.

⁶² He notes the President's Material Policy Commission in its Study, *Resources for Freedom*, writes of "the principle of Growth." "It is instructive to note," he comments, "the Commission's use of a Capital 'G.' A certain divinity is associated with the word." (p. 93). See also, V. Packard, *The Hidden Persuaders*, and *The Waste-Makers*, which exposes "hidden persuasion and status seeking . . . as symptoms of the national disease of waste with its concomitant distortion of life values" and "methodically unveils the appalling record of artificially induced wastefulness, the engineering of accelerated obsolescence, the domination of shortsighted greed as a guiding principle . . . [and] the phenomena of institutionalized wastefulness." *The New York Times Book Review*, October 2, 1960.

⁶³ "How Much Should A Country Consume?" *Perspectives on Conservation: Essays on America's Natural Resources* (Baltimore, Maryland: John Hopkins Press, 1959).

⁶⁴ A. M. Hauser in the same volume commenting on Galbraith's essay, "The Crucial Value Problems," pp. 98, 104, 105.

different time-vantage on a different front but in the same crusade, Galbraith replies to this argument rather caustically in a telling phrase. "Freedom," he says, "is not much concerned with tailfins or even with automobiles."⁶⁵

In any case, the argument that resource policy should not be concerned with consumption rates and patterns is, at best, inconsistent. The basic rationale for resource policy aims explicitly at *guiding* the allocation of resources towards the socially determined optima and does not take the market place as the final arbiter of what must or should be done in the social interest. In a more positive way, resource policy is logically concerned with anticipating "shortages" (in terms of rising relative costs rather than absolute disappearance) and should normally act to "head-off" anticipated problems by influencing the end-uses to which resources are put both in the aggregate and in particular cases. In a general way the result would be seen in increasing living standards without necessarily commensurate rises in the use of resources in general.⁶⁶

E. J. Mishan, *op. cit.*, reveals analytically the double-edged nature of consumer's freedom under discussion of "external diseconomies of consumption on consumption" and "external diseconomies of consumption on production." Paul Baran in his *Political Economy of Growth* (New York, New York: Monthly Review Press, 1957) expounds this theme at great length in all its facets.

⁶⁵ *Ibid.*, p. 96. See also his *The Affluent Society* which elaborates on this point and, for the same critique from a very different point of view, Paul Baran, *op. cit.*

⁶⁶ A related aspect, usually neglected, is brought out by Meier: "If a feeling of adequacy can be achieved with much less resources, then, for a given expenditure, a larger number of persons can be brought up to adequate levels. This goal puts emphasis upon the conservation of resources at the point of consumption. Hitherto conservation has almost always been discussed at the point of extraction or of processing. Such a formulation permits the introduction of the science of comfort and convenience, where principles of the latter, when joined to well-known principles for economizing,

The Need for An Integrated Approach

The basic difficulty in accepting a broad definition of resource policy as part of development policy stems from the great complexity of the socio-economic process and the consequent difficulty of analytically distinguishing the role of natural resources. Under the circumstances of our ignorance, it is no wonder that we find it difficult to isolate operationally useful definitions of what constitutes "resource problems" and to conceive of these problems in terms which cut across the conventional lines of professional specialization or departmental administration and jurisdiction.⁶⁷

We are most particularly interested in identifying the prevailing trends as a guide to the future so as to frame appropriate resource policy to meet the difficulties and realize the promises that are looming before us. There may be some value in differentiating the various types of natural resources by the role they play in the socio-economic process in a range that runs from non-substitutability of some "environmental-ecological resource" of land, air and water, to the greater substitutability of what we have called "economic resources" which are

improve the efficiency of consumption." *Science and Economic Development: New Patterns of Living* (New York, New York: Technology Press, 1956), p. 151, 152.

⁶⁷ Apropos of this, one experienced authority on this subject, Stephen Raushenbush, has written of "our failure to grapple more thoughtfully with the series of major [resource] problems and tasks which stretch out before the people of the nation." He attributes a great part of this failure to the inability of our "specialized age" to either comprehend and to act upon the understanding "that the problems spread across the resources . . . across the specialized fields of study and the disciplines of the colleges and universities . . . across the committees and departments of the [government] . . . as well as across the borders of the professional societies." (Stephen Raushenbush, "Conservation in 1952," *The Annals of the American Academy of Political and Social Science*, May 1952, p. 8, 9.)

merely to be considered as factor inputs along with labor and capital. It may help to differentiate natural resources by the type of contribution they make and differentiate policy measures by their impact on the different resources and thereby on the economy.⁶⁸

We may find our theorizing of limited scope and value as a guide to policy but it can, in some measure, bolster the old stand-by of common sense based on well-tried instincts. The only qualm about being guided by this "common sense" is that we can have little precedent and therefore unreliable intuitive feeling about the implications of the current "revolutionary" scientific-technological and socio-economic changes that are transforming our world so rapidly. What we face is more than a resource problem as such but, as R. L. Meier puts it: "The task is one of redesigning social institutions so that they are consonant with the revealed potentials of resource availability and technological efficiency."⁶⁹ Given the nature of the problems it becomes evident that the policy area designated as resource policy cannot be conceived or executed without this broader frame of reference and therefore adequate co-ordination among the various

governments and the various policy fields pertaining to the pace and pattern of economic development.

Though having in mind the United States situation, there is a more general relevance to a question asked and answered by an eminent and knowledgeable academician whose experience with the field of resource administration has taken him out of the ivory tower. C. M. Hardin of the University of Chicago put the question: "Can We Still Afford a Separate Resources Policy?"⁷⁰ His answer is negative but constructive:

"We can no longer live with . . . lavish and indiscriminate policies. We must re-examine the cost of heavy spending programs in natural resources, in agriculture, and elsewhere. . . . Proposals largely confined to improving relationships among major land and water agencies in their central development programs [are not enough]; the times call for a much more systematic cross-evaluation of natural resource policies both internally and also in their relationships to other policies, especially to fiscal and foreign policies. . . . We need some governmental means for taking the whole field of natural resources as a policy area and subjecting it to vigorous comparative evaluation with other large areas of national policy."⁷¹

This approach would seem both necessary and promising. The first step in this direction in planning for our future would call for a high and wide view from which problems and possibilities could be seen and acted upon on a national scale, yet with due respect for constitutional jurisdictions. It would also call for a broader concept of what constitutes the scope and elements of resources policy.

⁶⁸ One of the possible results might be an administrative reorganization so that responsibility for problems of resources maintenance of a non-economic nature (as for the research acquisition and development of land and water for recreation and urban environment and for meeting air and water pollution problems, etc.) is distinguished from resource problems which are more integrally related to economic development and call for co-ordination in a planned consistent and continuing manner with other elements of development policy including capital formation, scientific training and recruitment, etc.

⁶⁹ *Information, Resource Use, and Economic Growth*, op. cit., p. 9. This potential is explored in a provocative fashion in this paper and in his book, *Science and Economic Development, New Patterns of Living*, op. cit.

⁷⁰ *Perspectives on Conservation*, op. cit., pp. 227-232.

⁷¹ *Op. cit.*

Metropolitan Growth and Future Political Problems

By ANTHONY DOWNS*

DURING the next few decades, political problems within American metropolitan areas will become so critical that their importance may well rival that of world politics in our national life. The force which will cause this realignment of political urgencies is the rapid growth of metropolitan population that can be expected to occur in the United States over the next 25 years.

In his book, *Metropolis 1985*, Professor Raymond Vernon estimates that the population of the United States will be 286 million by 1985—an increase over the 1960 population of approximately 106 million persons.¹ Since almost 100 percent of this increase can be expected to occur in present and future metropolitan areas, Vernon's projection envisions almost a doubling of our 1960 metropolitan area population of 108 million within 25 years. Although I believe his projection is somewhat high, it nevertheless serves to illustrate the order of magnitude of the population growth which will occur.

Furthermore, the amount of land covered by metropolitan areas will grow much faster relative to their present size than will their total population relative to its present level. This is true because a high proportion of the new urban residents will live in suburbs which have a low density of about three families per acre or 7,000 people per square mile. At

present, about half of the people in metropolitan areas live in central cities which have much higher densities—as high as 15,000 persons per square mile in Chicago and 24,000 in New York. Even if some recentralization occurs and many people move back into central cities, a major portion of the new population growth will take place on the periphery of present metropolitan areas. Thus it is realistic to suppose that the amount of land covered by these areas will triple or quadruple if their population doubles.

A basic political dilemma will arise out of this situation because of the conflict of two forces: (1) the continuing dispersal of population in space which results in the formation of more and more political units particularly new cities and towns; and (2) the increasing complexity of metropolitan economic and social relations which requires more centralized power and decision-making if metropolitan areas are to function effectively. For several dozen years, urban analysts and planners have been urging the adoption of metropolitan government as a way out of this dilemma. However, experience proves that neither voters nor politicians will accept metropolitan government since it reduces the amount of power in the hands of the average citizen and the average local politician. We can expect this same attitude to prevail in the future; therefore, new local political entities will spring up like mushrooms across the landscape as the area of residential settlement spreads out and power over metropolitan affairs will become ever more decentralized among thousands of governments.

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¹ Raymond Vernon, *Metropolis 1985* (Cambridge, Massachusetts: Harvard University Press, 1960).

The resulting tension between increased dispersion of political power on the one hand and increased need for central control and direction on the other hand will give rise to at least six major political problems. Most of them are already making themselves felt but they will soon become much more serious. In this article I will list these six problems, discuss each briefly, and then attempt to point out what fundamental trends can be expected to arise from them.

The first problem can be stated as follows: *Central cities will become increasingly isolated from political access to the resources they need to pay for the special costs generated by their function in the metropolitan area.* At the present time, central cities within our metropolitan areas contain a large portion of the industrial resources of the nation and a great many of its commercial assets.² Therefore they have a tax base much greater than the value of their residential structures. However, because of their specialized functions in metropolitan areas they also have much greater expenditure needs per capita than their suburban neighbors.³ In particular, central cities contain (1) our major cultural institutions, (2) the residences of most of the lower-income workers who form the underpinnings of metropolitan econ-

omies, (3) the transportation networks which move people from outlying residences to centralized places of work, and (4) the agglomerations of office buildings and other central-place-oriented structures in which many residents of outlying areas earn their living. All of these features generate special public costs not present (at least to the same extent) in outlying suburbs, whereas only the last feature contributes substantially to the tax rolls or even pays for its own needs. As metropolitan areas grow, more and more industry can be expected to locate outside of central cities. This will occur partly because there is not enough room left within those cities and partly because firms will find certain economic advantages in outlying locations. However, the low-income population which works in all parts of the metropolitan area will continue to reside mainly within central cities and in older, close-in suburbs because only in those areas will large quantities of older housing become available at low rents. Since these citizens absorb more than a proportional share of social services, expenditure needs of central cities will rise relative to those of newer outlying areas. This will occur at the same time that increments to the tax base of central cities are falling relative to those experienced in outlying suburbs. Not only will fewer new industries locate in central cities but the construction of new highways and urban renewal projects may drive many existing businesses now located therein to new outlying sites. Thus we can expect financial problems within central cities to become steadily worse.

Even if these cities can attract suburban middle-income families back into redeveloped areas, financial problems will not diminish. In order to make residential neighborhoods attractive to

²Raymond Vernon, *The Changing Economic Function of the Central City* (New York, New York: Committee for Economic Development, 1959).

³A distinction should be made between older, close-in, long-established, *mature* suburbs and *newer* suburbs. The *mature* suburbs are gradually changing in character so as to closely more resemble central cities in many respects such as higher-density residential land use, greater proportions of old and obsolescent buildings, and smaller family sizes than *newer* suburbs. Throughout most of the analysis in this article the term *suburbs* is used to refer to *newer* suburbs unless otherwise noted. I am indebted to Professor Margaret Reid of the University of Chicago for giving emphasis to this important distinction.

middle-income families, cities must provide high levels of social service (such as police protection, garbage collection, building code enforcement, and maintenance of school standards)—higher than the average levels now experienced in these cities. Therefore, the addition of such redeveloped areas to the tax base will not cause any substantial net gain in revenues over expenditures.

As this financial squeeze becomes tighter and tighter, we can expect central cities to adopt the following devices to ease the pressure: (1) They will increasingly turn to federal government programs for assistance. (2) They will make more use of local non-property taxes (such as earnings taxes) whenever such devices will not drive people or businesses out of town. (3) They will begin reassessing property on the basis of its income-earning power rather than its depreciated book value. (4) If the financial squeeze really gets tight, they will reduce welfare expenditures and lower the general level of city services.

The second political problem arising from metropolitan growth can be stated as follows: *In new suburban communities there will not be enough industrial and commercial property to "go around" to all the new political entities formed; therefore, in many of them home owners will have to bear tremendous tax burdens if they are to maintain adequate public services.* As indicated before, we can expect a high percentage of new industrial establishments and other production facilities to be located in outlying areas, either in suburbs or more rural environments. Therefore suburban and rural communities will receive increments to their tax bases that would seemingly ease the burden upon residential property owners. However, even if the overall tax base of those portions of a

metropolitan area outside the central city rises rapidly because of new production facilities, these facilities will not be evenly distributed among the new cities and towns formed in suburbia. In high-density cities a very large number of people can be located within the same political boundaries as a large number of industrial and commercial establishments. But in our new suburban communities the average population within each political unit is much lower than in central cities, both because these units are small and because their population is spread thinly over the landscape. Hence, we can expect a given population to be divided into many more political entities in the suburbs than in central cities; so the taxable resources formed by industrial and commercial establishments must be split up among many more governments.

There is no *a priori* reason to suppose that these resources will be evenly distributed among the many new governmental territories so formed. The high mobility of auto-driving workers, customers, and shoppers in suburban areas allows industrial, office, retail, and other facilities to be located in a few concentrated clusters which serve very widespread areas. Such clustering is further encouraged by the specific factors like the convergence of highway systems in a few key spots, irregular geographic features such as rivers and hills, advantages of locating near existing railroad networks, and the creation of attractive industrial parks in well-located communities.

Consequently, some suburbs will find themselves endowed with non-residential additions to their tax base more than adequate for handling all their governmental expenses; others will be forced to pay for the heavy expenditures caused by

growing populations with very few commercial or industrial properties on which to place some of their resulting tax burdens. Recently, some shrewd industrial firms have even managed to forestall almost all local property taxation by incorporating their plants along with a few acres of residential land as separate communities. Thus the political fragmentation of suburbia combined with geographically uneven distribution of productive facilities will place very heavy tax burdens on many suburban residents.

These burdens will be accentuated by the fact that the expenses of providing certain types of social service in low-density areas are relatively great and the standards of normal public service expected by suburban residents are much higher than those expected by the lower-income residents of central cities. Moreover, the resulting tax-rate disparity among suburbs cannot be eliminated by merger of "have" and "have-not" suburbs. The "have" suburbs will naturally oppose any dilution of their tax base by consolidation with "have-nots"; hence democracy will prevent equality.

For these reasons, many suburban residents will also feel a financial squeeze. Furthermore, they cannot use federal aid to escape from this squeeze as effectively as central cities can. Except in periods of substantial unemployment, federal aid programs are financed largely by income taxes. Since suburban residents have relatively high incomes, they contribute more-than-proportionally to such programs. Thus, in the long run, use of federal aid does not represent a significant net gain for suburban areas, although specific suburbs receiving large grants benefit at the expense of those which receive none. Essentially, those suburban residents caught in the squeeze described above can solve their local tax problems

only by allocating more of their personal incomes to local government needs or by accepting lower levels of community service than have been considered adequate in suburban areas.

The third political problem arising from metropolitan growth is closely related to the first two: *As metropolitan political power becomes more dispersed in many political units but the economic and social interrelations among these units become more complex, the need for coordinating specific functions will rise at the same time as the ability to coordinate them falls.* Examples of specific functions which must be coordinated among many political units are highways, sewerage systems, water systems, public utilities, public transit, port and airport operations, recreational facilities, and law-enforcement machinery. In addition, land-use planning and zoning in one section of the metropolitan area cannot be intelligently carried out unless developments in other sections are taken into account. Yet, as the number of governments multiplies, the possibility of effectively coordinating their efforts will steadily decline.

Since metropolitan government per se will not be adopted, substitutes for it concerning specific functions will be invented. These substitutes will consist either of programs run by the federal government (or in fewer cases, by state governments), or will be metropolitan-level "authorities" or other public bodies especially constructed to deal with specific functional problems. Many such quasi-independent bodies already have jurisdiction across local political boundaries and their number can be expected to increase.⁴ Sooner or later, the problem

⁴For a discussion of this development see Robert C. Wood, *1400 Governments* (Cambridge, Massachusetts: Harvard University Press, 1961), chapter 4.

of coordinating these coordinators will also become acute. It is conceivable that a super-authority will then be created to oversee all the specific authorities. Thus a new form of metropolitan government may eventually sneak in by the back door.

All these devices are essentially evasions of the need to obtain voter approval for creating metropolitan government. For reasons we shall discuss below, voters do not wish to sacrifice local autonomy in government but the hard facts of metropolitan life will force them to agree tacitly to the creation of metropolitan-wide authorities. As a result, we will experience an unplanned, rather chaotic growth of metropolitan authorities existing side by side with local governments although the latter will zealously retain certain prerogatives. The federal government will undoubtedly act as an instrument for creating such metropolitan-wide authorities by drafting programs which require that area-wide plans be drawn up before funds can be released. This has already occurred to some extent in the highway program and will occur in other areas. In any event, the solution to the coordination problem will not be based on adoption of one simple and logical mechanism like metropolitan government, but will instead spring from an increasingly bewildering proliferation of both local and area-wide governmental units.

The fourth political problem is confined largely to central cities and can be stated as follows: *In order to attract middle-income and high-income residents into redeveloped neighborhoods, central cities need to create devices for giving enough local autonomy to these neighborhoods so that different levels of social service can be provided in different parts of the city.* In our democratic society we

dislike admitting that the desire for segregation—both racial and cultural—has been one of the major causes of our suburban growth. A great many people move to the suburbs seeking a cultural and social homogeneity which exists within each suburb but is absent in our larger cities. Such homogeneity appeals to young people rearing children because it creates the kind of atmosphere in which they can pass on their cultural values to their offspring without exposing them to conflicting viewpoints. Naturally, this homogeneity is not everywhere of the same character; there are markedly different cultural levels and outlooks in different suburbs with the differences often highly correlated with variations in the income-levels of the residents.⁵

However, all suburbs have one major advantage regarding cultural homogeneity that is not shared by larger cities: suburban residents can make use of legal machinery to maintain their homogeneity by excluding those who might change it. Of course, they cannot directly prevent any particular group from entering by passing discriminatory laws but they can set up and enforce specific standards regarding building quality, tax rates, the character of public services, and the nature of the school system. By raising these standards high enough, they can make it economically impossible for "disrupting" elements to enter the area and dilute the homogeneity they seek to establish.

Within central cities such legal differentiation between neighborhoods is not possible. Residents of one part of the city cannot legally prevent people from

⁵For many of the ideas expressed in this section I am indebted to Professor Richard Meier of the University of Michigan.

other parts of it from moving into their area by raising neighborhood building standards; therefore they cannot permanently maintain differential standards regarding schools and public services. True, in some urban renewal neighborhoods strict enforcement of existing laws creates *de facto* legal differentiation because the same laws are loosely enforced elsewhere. However, such maintenance of local standards requires the sustained efforts of a major local political force (such as a university), and forces of this caliber are few and far between.

Even if the residents of a particular central-city neighborhood were willing to pay higher taxes to give themselves better schools and public services *in their own area*, there are no mechanisms by which they can do so. This inability to establish and maintain local homogeneity has driven many thousands of families from central cities when their own neighborhoods were faced with radical changes in cultural and economic standards through in-migration. In fact, much of the flight from areas of racial transition is ultimately fear of social and cultural change rather than fear of ethnic change *per se*. It is not the color of the Negro doctor who first moves into an all-white neighborhood that "frightens" the whites away; it is their belief that he will be followed by a "horde" of Negroes with much lower cultural, economic, and moral standards.

In my opinion, middle-income and upper-income white families will not move into central cities in any large numbers unless cultural (not racial) homogeneity of local neighborhoods can somehow be reconstituted. At present, the only legal method of maintaining such homogeneity within central cities is through the market; that is, by driving the price of residences in a certain area

up so high that only persons with high incomes—and therefore presumably high cultural standards also—can afford them. However, there are only a few areas within each central city which have natural locational features that will generate such high prices. Furthermore, these prices are too high to attract income groups which are numerous enough to cause any real revival in central cities.

These facts imply that any central city which seeks to foster a large-scale "return to the city" by middle-income groups must create devices for allowing local neighborhoods to have more control over governmental matters in their own areas.⁶ In particular, there are four different aspects of government regarding which more local autonomy can be given: (1) schools, (2) the level of social services, (3) building code standards and enforcement, and (4) local taxes. In the past, local differentiation concerning some of these aspects of government has in fact been tacitly accomplished. A return to such differentiation is also implicit in the new urban renewal projects now being carried out in many cities. The level of government services within these renewal areas is often much higher than it is in nearby slum areas because otherwise no new residents of the requisite income levels could be attracted into the redeveloped area.

Theoretically, it would be possible to achieve the same results without differentiation among neighborhoods by raising the total percentage of all central-city personal incomes devoted to local government services. However, it is quite possible that lower-income citizens do not want the same services from their government as do their higher-income

⁶ This device was first suggested to me by Professor Norton Long of Northwestern University.

neighbors. Therefore, it may in fact be more democratic to introduce more local autonomy within central city government than to maintain our present theoretically-identical levels of service throughout the city. Without question we should still spread the tax income from major industrial and commercial establishments in the city over all citizens equally so as to provide everyone with a basic minimum level of service. We should also leave the central-city government with full powers to carry out overall planning functions and locate such community services as highways, sewers, parks, and transportation. But it would still be in the tradition of American self-government to allow residents of each local area within the city to add onto this basic minimum level—at their own expense—if they wanted to do so.

However, the political problems of creating the legal machinery for such local autonomy are enormous because of the tremendous complexity of forces operating within our cities. For example, greater local autonomy leading to higher building standards in some areas might create barriers to movement within central cities for lower-income citizens. Such barriers might aggravate the existing "ghetto" concentrations of low-income Negroes, especially since the constant stream of rural Negroes into central cities would tend to expand these "ghettos" until they ran into the barriers created by local autonomy.

Because of such difficulties it may in the long run prove more practical to increase local autonomy through private non-governmental organizations than by creating more legal independence in each neighborhood. Already, citizens committees within specific neighborhoods are acting as watchdogs, encouraging high standards of building repair,

compliance with density regulations, and aesthetic appearance. For example, in the Hyde Park and Lincoln Park areas of Chicago, non-governmental citizens groups have been formed to prod city agencies into enforcing density laws which prohibit the division of older single-family homes into multi-family units and these groups are beginning to make substantial headway. It is no coincidence that both of these areas are involved in urban renewal programs. As pointed out above, the success of urban renewal usually depends upon the maintenance of higher-than-average neighborhood conditions. Yet here wholly non-governmental groups (in one case strongly supported by a major university) are taking the initiative in achieving and maintaining such conditions.

Regardless of whether increased local autonomy will come through private or public institutions, the process of working out effective means of supplementing the market in maintaining high neighborhood standards will be extremely complex. For this reason it will probably take the citizens of central cities at least a decade to formulate the devices necessary to accomplish this goal. Therefore, for the next ten years, we can expect relatively little mass recentralization in central cities by middle-income families in the child-rearing age groups. The only way in which this long gestation period could be circumvented is creation of a truly massive urban renewal program supported by the federal government. Such a program would have to be so large that whole neighborhoods of high-school-district size would be demolished and replaced by newly-constructed developments occupied by middle-class residents who would initially establish high standards and maintain them henceforth. At present, urban renewal

spending on such a scale seems improbable.

The fifth problem which is arising because of metropolitan growth can be expressed as follows: *Unless minority groups—particularly Negroes—are given wider residential choice and greater access to all other symbols of social status, there will be increasing social cleavage between ethnic groups and a serious possibility of disaffection from our governmental system by racial minorities.* Although some cultural segregation can be regarded as an inescapable part of suburban growth in metropolitan areas, there is no real need for such segregation to be maintained along racial lines. However, it has been so maintained in our Northern and Western cities. Insofar as Negroes and other minority groups have been kept "bottled up" within specific areas—often overcrowded and less desirable in character—the aspiration of middle-income and upper-income Negroes to attain the same standards as their white counterparts has been seriously frustrated. These Negroes are just as anxious as whites to protect their own social and cultural standards by creating local homogeneity but they have rarely been able to create middle-class suburbs of their own or to move into white suburbs which already have the kind of cultural standards they seek. As metropolitan areas rapidly expand outward, either this blocking of legitimate aspirations by Negro citizens must be alleviated or we can expect them to become increasingly hostile towards our white-dominated society. It is certainly true that housing for Negroes has become more widely available because of the surplus in the housing market which has developed since 1957. As this surplus expands and vacancy rates rise we can expect some of this Negro frustration to

be relieved. Nevertheless, the rapid growth of the Black Muslim separatist movement among urban Negroes is a disquieting sign of outright hostility to all white people. Yet we must expect such signs to become more numerous if we deny to Negroes and other minorities access to the status-paths along which whites move. This problem is most acute in the South regarding schools, but it will become considerably more significant in the North in spite of the diminished movement of lower-income Negroes to northern and western cities. Furthermore, the international ramifications of our domestic relations between whites and Negroes are becoming daily more significant. In the long run the ethnic tension connected with urban growth will be both the most serious and the most difficult of all our urban problems.

The last problem which I wish to point out as related to metropolitan growth is the following one: Since the basis for an expanding population is ultimately an expanding number of jobs, we must have reasonably rapid economic growth to sustain our living standards but *the particular kind of economic growth we are likely to experience may create a growing pool of unemployed and perhaps unemployable labor in central cities and mature suburbs.*

Our society is currently producing large numbers of unskilled workers at the same time that automation is drastically reducing the demand for such workers. At present, from 33 to 40 percent of all the children in the nation entering high school drop out before they graduate; and it is estimated that around 7.5 million such drop-outs will occur from 1960 through 1970.⁷ The low educational attainment of these young people makes them poorly suited for any

kind of work other than unskilled or semi-skilled jobs. Yet automation is simultaneously reducing the proportional number of such jobs available to an amazing degree. For example, from 1951 to 1961, the index of United States manufacturing output rose about 46.6 percent but the number of production workers employed remained almost constant at about 12 million. The impact upon individual firms of such rapid automation can be startling. General Electric raised its output by 8 percent in the three years from 1956 to 1959 but reduced its production workers by 25 percent during the same period. Most of the jobs eliminated were in the unskilled or semi-skilled categories.⁸

As a result of the above factors, unemployment rates among young members of the labor force are disproportionately high. This is particularly true of young Negroes since they are more likely to drop out of high school before graduation than whites and less likely to receive impartial consideration for whatever jobs are available. Hence, unemployment rates among Negroes aged 16 to 21 who are out of school range as high as 50 percent in some large cities. Especially in our larger Northern metropolitan areas, low-income Negroes and whites are concentrated in central cities and some older suburbs. Because of the much higher incidence of high school drop-outs among these groups than among the higher-income groups living in newer suburbs, problems like juvenile

delinquency and high crime rates often occur primarily within the boundaries of central cities and older suburbs.⁹ Thus the already-noted difficulties caused by the heavy social-service burdens borne by these cities will be further aggravated by the type of structural unemployment likely to occur in the near future. Moreover, the concentration of unemployment and related social maladies among Negroes is likely to further aggravate the potential disaffection of Negroes from our white-dominated society.

Although both these problems are much more acute in our larger Northern metropolitan areas than in other parts of the country, these particular areas contain a significant proportion of the nation's total population, both white and nonwhite. The only way to prevent the above-described dual aggravation of existing political problems in these areas is to maintain a high level of employment among *all* elements of our future population. This objective will require expanding aggregate demand, considerable retraining of presently-unemployed workers, and improved educational standards among young people in high school. All three of these goals will necessitate continued high levels of federal government spending, both in federal programs and in programs of assistance to state and metropolitan-area governments. For this reason we can expect increasing willingness on the part of the federal government to engage in programs of assistance to local and state governments such as those described above.

⁸ Committee on Educational Finance of the National Education Association, *Financing Education for Our Changing Population* (Washington, D. C.: National Education Association, 1961), p. 22.

⁹ Gerard Piel, *Consumers of Abundance* (Santa Barbara, California: Occasional Paper, published by the Center for the Study of Democratic Institutions, 1961), pp. 6-7.

⁹ An excellent discussion of this problem is presented by James B. Conant in *Slums and Suburbs* (New York, New York: McGraw-Hill Book Company, Inc., 1961).

The six fundamental problems arising from metropolitan growth which are enumerated above are not new nor are all of them found to an equal extent in all parts of the country. However, their intensity is bound to increase as our metropolitan areas "explode" outward in space and upward in total population. From what has been said, it appears that the basic dilemma caused by increased dispersal of people and local government authority versus the need for greater centralization of power will be solved in two ways. First, more metropolitan-wide

authorities will appear on the scene to fill the vacuum left by the unwillingness of existing entities to merge into metropolitan governments. Second, the federal government will increasingly act as an intermediary collecting funds from people throughout the metropolitan area via personal and corporate income taxes and disbursing those funds into the specialized areas where the need for them is greatest. Thus it will fulfill the economic function which unmerged local governments cannot undertake.

Use of Airphoto Interpretation in Agricultural Land Economics Research†

By KENNETH C. NOBE*

ALTHOUGH airphoto interpretation is widely used by engineers, foresters, and soil surveyors, it has not yet been generally utilized by agricultural land economists as a practical means of obtaining essential basic data. Rapid data computing machines, linear programming, sample survey methods, and other rapid and economical means of acquiring and processing basic data have become accepted tools of the trade. Properly applied to analytical problems, airphoto interpretation is a useful implement in economic analysis as has been demonstrated in a number of recently completed land economics studies.

The case for adequate and reliable basic data economically acquired is set forth by L. E. Klimm as follows:

"... If the data gathered to test our hypotheses are going to be used as grist for other mills, shouldn't its gathering and presentation be a disciplined procedure with its potential users in mind? These questions are raised anew, here, because the need and opportunities for useful nontheoretical descriptions are greater than ever. The amount of data becomes overwhelming. Airphoto coverage, for example, is available for large areas of the United

States. From this it is possible to determine with great accuracy, the distribution of urbanized areas, forests, agricultural areas, etc. Boundaries may be located and measurements made on scales from 1:20,000 down. Indeed, this embarrassment of riches may necessitate new methods of thinking. . . ."¹

This paper is intended to explain the internal mechanics of airphoto interpretation. It attempts also to dispel the idea that the results of airphoto analysis are not sufficiently reliable for use in economic analysis and to illustrate the potentialities for greater use of airphoto interpretation in agricultural land economics research. A number of recently completed research projects which employed airphoto interpretation techniques will be discussed briefly.

Basic Principles of Airphoto Interpretation

Airphotos present an intricate pattern of black and white, as well as many shades of gray, on a flat surface. But the color patterns have no meaning to a researcher unless they are related to objects in the real world. The process of learning to interpret airphotos, that is, of relating the photo patterns to real world situations, is largely deductive. A well-developed sense of logic is the first prerequisite for an airphoto interpreter.

In many respects an airphoto is analogous to a message written in code. Both present a pattern that is meaningless to

† The author is especially indebted to E. E. Hardy, Cornell University and to H. A. Johnson, Economic Research Service, United States Department of Agriculture, for helpful suggestions and review comments on an early draft of this article. The views expressed herein are those of the author and not necessarily those of the Public Health Service.

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¹ L. E. Klimm, "Mere Description," Guest Editorial, *Economic Geography*, January 1959.

the reader until the "code" is broken. It has been demonstrated that any intelligent person can be taught that a combination of dots and dashes is equivalent to letters of the alphabet and to produce "words" from these symbols, even though he may not be taught how to read the results. Similarly, a person can be taught the mechanical aspects of airphoto interpretation without acquiring an understanding of what the results mean when applied to a specific problem. The results of airphoto interpretation by analysts trained only in the mechanical aspects of this technique have been used in some instances for economic studies but unsatisfactory conclusions have resulted. This has led some agricultural economists to regard airphoto studies in general with suspicion.

When airphoto interpretation is properly applied to an analytical problem, it involves more than the mechanical process of transferring black and white patterns into physical quantities. A second step is required in which the physical data are evaluated in terms of their significance to the objective of the problem under consideration. The net value of airphoto interpretation techniques depends upon the ability of the researcher to determine logically whether visible photo patterns can be accurately associated with significant factors in the study area.

A trained airphoto interpreter can pick out various features apparent on close inspection of the photographs. Comprehensive keys have been developed as guides in some fields.² But many photo features can be associated with the things they represent in the field only through first hand inspection or an inti-

mate knowledge of the study area, or both. The question to be answered is always, "Why does it look that way?" This is especially true for features that reflect soil differences and intensity of land use. Usually, field checking of a small study-area sample is sufficient.

The basic concepts of airphoto interpretation need to be understood and appreciated before reliably consistent results for airphoto interpretation can be attained. Two ground rules are emphasized: (1) in itself, the airphoto is only a record of unidentified information—a raw material that must be processed; and (2) the interpreter must identify selected information in some systematic and objective way.³

Potential of Airphotos as a Research Tool

Airphotos can be used in land economics research in a number of ways. Such uses range from a short-cut means of aggregating basic data to a detailed analysis involving associative interpretation. The photos can serve as blueprints for formulating a study, orienting a selected problem to a geographic area, or selecting a sample for detailed study; they can provide a means for an overall reconnaissance review of the study universe; and in some instances they can serve as the major source of data for final analysis. In research projects for which detailed field studies would be prohibitive in terms of time and cost, airphotos can be used to study the whole universe area or in conjunction with detailed field studies of sample areas. In land use field reconnaissance surveys, for example, they are useful both as guide maps and as a

²R. DeLancie et al, "Quantitative Evaluation of Photo Interpretation Keys," *Photogrammetric Engineering*, December 1957.

³T. D. Seymour, "The Interpretation of Unidentified Information: A Basic Concept," *Photogrammetric Engineering*, March 1957.

means of understanding micro and macro pattern variations of interrelated resources in the study area.

Most studies in which airphotos are used lie somewhere in the middle area between aggregation of data and associative interpretation. The discussion that follows, however, deals with the extremes of airphoto use in order to demonstrate the wide latitude that exists in the useful application of airphotos and airphoto interpretation in agricultural economics research.

Direct Aggregation of Data

Direct aggregation of data from airphotos has become an accepted method of obtaining basic data for some kinds of economic research. Studies of crop identification and land use changes are examples of the use of such data.⁴ The obtaining of such data, however, does not qualify entirely as airphoto interpretation although the ground rules for airphoto interpretation apply. In most instances it involves only an enumeration of observable characteristics without requiring an interpretation of their effect or their relationship to a given factor.

The problem is simplified and the margin for error reduced when study is limited to enumeration of readily identifiable photo characteristics. This approach has gained favor because researchers with some training in the use of airphotos can collect large amounts of physical data quickly and economically. Also, it has given individual researchers

confidence in airphotos and has led to further uses of airphotos in conjunction with photo interpretation and problem analysis.

The Concept of Associative Interpretation

Associative interpretation is a more complex procedure than is direct aggregation of physical data from airphotos. In addition to direct aggregation it involves the identification and evaluation of unseen phenomena from related observable characteristics on airphotos. The use of this approach in a farm-management study, for example, is based on the assumption that the trained observer, relying on experience, judgment, and farm business records from a sample of farmers in the study area, can appraise adequately the organization and relative financial condition of given farm units for purposes of the assignment. The validity of this assumption was demonstrated in a New York study in which data from complete enumeration of all farmers in a selected area were compared with data obtained by airphoto interpretation. The results indicated that airphotos are comparable to farmer interviews in providing basic data for: (1) describing agricultural areas in terms of intensity of land use, income expectancy, and type of farming; (2) construction of sample designs for farm-management surveys; and (3) studies of changes in land use and type of farming through time.⁵

G. R. Heath provides encouragement for the associative interpretation approach. He states in part:

⁴N. Carls, *How to Read Aerial Photographs for Census Work*, United States Bureau of the Census, United States Government Printing Office, Washington, D. C., July 1947; and M. S. Goodman, "A Technique for the Identification of Farm Crops on Aerial Photographs," *Photogrammetric Engineering*, March 1959.

⁵K. C. Nobe, "Results of a Test of Airphoto Interpretation as a Tool in Farm Management and Land Economics Research," *Land Economics*, August 1958.

"The factors which limit or encourage man's activities are frequently visible on airphotos. . . . Some of these factors cannot be seen on airphotos but are merely indicated, just as [for example] flooded paddies indicate rice culture. . . . By combining many of these indicators they become mutually supporting, so that the mere inferences become acceptable as logical conclusions. . . . Apply this technique the associative mapper uses geographic correlations in connection with landscape associations which he can see on airphotos. He deduces the unseen presence of one thing from the visible presence of other things, by the convergence of evidence. . . ."⁶

The application of the associative concept requires a correlation of interrelated factors in order to convey to the researcher what observable individual factors on airphotos mean to the problem under study. Implied in this technique is the assumption that most of the information obtained by direct aggregation will be used in turn to obtain indirectly the additional information needed. Usually new indicators need to be developed for each area and problem to be studied. Not all indicators are readily transferable.

Most associative interpretation is related to "internal associations." For instance, there is a direct connection between flooded rice paddies and rice culture or between a barn and silo with a livestock enterprise. "External associations" are used also by analysts of considerable experience in determining the composite effect of either related or unrelated factors on a single phenomenon. "Analysts . . . who are professionally competent in more than one field, occasionally use two or three 'external asso-

ciations,' such as the association between landforms, vegetation and culture to provide an interpretation."⁷

Associative airphoto interpretation has been adopted successfully in the physical sciences and engineering fields. The soil mapper, for example, has found it a useful tool in relating external indicators to inherent soil differences.⁸ The use of airphoto interpretation techniques by a team of engineers and physical scientists to select the new capital site of Brazil and the forester's daily use of the process to estimate timber volumes are additional examples.⁹

Examples of Airphoto Use in Agricultural Economics Research

Recently, airphoto interpretation techniques have been used in a number of agricultural economic studies. Most of these studies were concerned with various aspects of land use. In most instances, intensity of application was beyond the direct-aggregation-of-data stage but somewhat short of comprehensive associative interpretation. A few examples will demonstrate the wide range of conditions in which airphoto interpretation techniques can be useful to agricultural researchers.¹⁰

⁶ *Ibid.*

⁷ For detailed discussions of the use of airphoto interpretation in soil mapping, see: D. S. Jenkins, D. J. Belcher, et al., "The Origin, Distribution, and Airphoto Identification of United States Soils," United States Department of Commerce, Civil Aeronautics Administration, May 1956; and R. Feur, "The Use of Aerial Photographs in Exploratory Soil Surveys," Paper read at the Twenty-second Annual Meeting of the American Society of Photogrammetry, Washington, D. C., March 22, 1956.

⁸ M. J. Feree, *A Method of Estimating Timber Volumes from Aerial Photographs*, State University of New York, College of Forestry, Syracuse, New York, 1953.

⁹ For further discussion and listings of such studies see: K. C. Nobe and I. R. Starbird, "Airphoto

¹⁰ G. R. Heath, "Correlations between Man's Activity and His Environment Which May be Analyzed by Photo Interpretation," *Photogrammetric Engineering*, March 1957.

Researchers working on a study of agricultural regions in New York State estimate a saving of 10 man-years of field-work as a result of the adoption of air-photo interpretation in combination with streamlined field reconnaissance methods. The associative airphoto interpretation concept was used in this study to integrate a large body of secondary information with field observations. Conclusions arrived at in this way provided a basis for classification of land resources at the farm real estate level. Conclusions were reached by associating such visible aspects from airphotos as landforms, field sizes, land use and the like, with expected farm income-producing potential under known input-output relationships. The study provided a preliminary stratification of New York State as a first step in carrying out detailed farm-management studies on a regional level.¹¹

An airphoto is a picture of history at a given point in time. Airphotos, therefore, are particularly useful for land use studies. F. J. Marschner used airphotos extensively in a land use study of the United States and to illustrate his report.¹² In studies of areas in which several airphoto coverages over time are available, changes in pattern and intensity of use can be measured and evaluated

accurately.¹³ This approach was used in a North Carolina land clearing and drainage study.¹⁴ Land use planning and development studies in Canada rely heavily upon airphoto interpretation.¹⁵ The use of a random sample of airphotos has been found to be sufficiently reliable for some kinds of land use studies that involve large areas. A random-point method for this purpose was developed recently by Jack Lessinger in California.¹⁶

Adaptation of airphoto interpretation techniques for land-classification studies was proposed by Robert Costello in 1951.¹⁷ A recently completed land-classification study of 27 counties in New York State was based primarily on data obtained through airphoto interpretation.¹⁸ Use of airphotos as a tool for classifying recreational potentials of rural land has been tested in California and a nationwide survey is currently under consideration.¹⁹ Plans have been made to make widespread use of airphotos in

Interpretation," *An Annotated Bibliography of Background Material for the Description and Delineation of Agricultural Regions in New York*, 600 References by Subject Matter (Ithaca, New York: Cornell University, Department of Agricultural Economics) mimeo, August 1958; and American Society of Photogrammetry, "Photo Interpretation in Agriculture," *Manual of Photographic Interpretation*, (Washington, D. C.), 1959.

¹¹ H. E. Conklin et al., "New Map Shows Agricultural Regions of New York State," *Farm Research*, September 1958.

¹² F. J. Marschner, *Land Use and Its Patterns in the United States* (Washington, D. C.: United States Department of Agriculture, Agricultural Handbook No. 153), April 1959.

¹³ H. W. Dill, Jr., "Use of the Comparison Method in Agricultural Airphoto Interpretation," *Photogrammetric Engineering*, March 1959.

¹⁴ H. W. Dill, Jr., "Land Clearing and Drainage Data from Airphoto Interpretation," *United States Department of Agricultural Economics Research*, July 1957.

¹⁵ L. E. Philpotts, *Airphoto Interpretation of Land Use in the Central Interior of British Columbia, 1945 to 1955* (Ottawa, Canada: Canada Department of Agriculture) June 1957; and R. M. Irving, "Urban Impact in the Niagara Fruit Belt," *Journal of Soil and Water Conservation*, March 1959.

¹⁶ This method was developed by Jack Lessinger, Agricultural Research Service, United States Department of Agriculture, as part of a study on changing land use patterns in Santa Clara County, California in 1958. A report on the study is in process of publication.

¹⁷ R. B. Costello, "Possibilities for Utilizing Air Photo Interpretation in the Cornell Economic Land Classification System," *Land Economics*, February 1951.

¹⁸ K. C. Nobe et al., "Traffic Lights—For New York State Farm Land?" *Farm Research*, June 1958.

¹⁹ National Advisory Council on Regional Recreational Planning, *A User-Resource Recreation Planning Method*, Hidden Valley, Loomis, California, May 1959.

a study of agricultural development potential in Venezuela.

Airphotos have been used in a number of water-resource development and control studies.²⁰ Currently, they are used for both direct aggregation of basic data and associative interpretation in a comprehensive survey of the Potomac River Basin.²¹ They are playing a major role in preparing projections of future agricultural land use in the Basin and for evaluating the probable effects of alternative means of water development and control.

Airphotos and interpretation techniques are applicable to a wide range of land economics and resource development research problems. Airphotos are particularly useful in land use and other studies in which a large number of variables that may be related to geographic areas are taken into consideration. Their use in closely related fields in agricultural economics such as farm management

and marketing has not been fully explored as yet.

Summary

Airphoto analysis has not gained widespread acceptance as a tool in agricultural land economics research because of inadequate understanding by many individual researchers of the mechanics involved. In recent years, however, increasing recognition has been given this technique. The direct-aggregation-of-data approach is gradually gaining recognition mainly because of its simplicity and its savings in both time and money. The associative interpretation technique has been used by engineers, soil scientists and foresters for some years. But this technique has only recently been adapted to agricultural land economics studies.

The results of studies recently completed have demonstrated that in some kinds of land economics work airphoto interpretation can be used successfully in preference to more expensive and time-consuming methods.

Properly used, it can remove many difficult and time-consuming problems of field enumeration, increase accuracy, and improve coverage. Most important, it will improve the overall competence and productivity of land economists whether they are engaged in research, teaching, extension, or the administering of action programs.

²⁰ H. W. Dill, Jr., "Airphoto Interpretation Inventory and Planning," *Journal of Soil and Water Conservation*, April 1952; "Photo Interpretation in Flood Control Appraisal," *Photogrammetric Engineering*, March 1955; and K. C. Nobe and H. W. Dill, Jr., "Evaluation of Agricultural Flood Damage by Airphoto Analysis of Flood Plain Samples," *Agricultural Economics Research*, October 1959.

²¹ The Corps of Engineers, United States Army, is authorized to prepare a plan for the development and conservation of water and related resources in the Potomac River Basin. Participating in this study are several federal and state agencies. The United States Department of Agriculture has assumed responsibility for the agricultural aspects of the overall survey.

The New York Metropolitan Region: Social Forces and the Flight to Suburbia

By ROSALIND TOUGH* and GORDON D. MAC DONALD**

THE FLIGHT to suburbia has become a national phenomenon since World War II; wherever there is a city of any size to act as a nucleus, there is an urbanized area attached. Largely within the last decade this urbanized area has developed characteristics sharply in contrast to the central city. Together, however, city and urbanized area, adjacent or contiguous, form a whole—generally referred to as a metropolitan region or, in a narrower sense, as a metropolitan area. Population movements and the resulting new patterns of living do not result from over-all master plans. Rather, two sets of social forces are at work, those producing dispersal and those effecting cohesion of population. Since these forces are in operation in all sections of the United States, it is the purpose of this study to show how they operate in terms of population redistribution, with emphasis on the New York Metropolitan Region.

In general, data are presented to answer the following questions: what changes are occurring in the economic status of the people within New York City and its Metropolitan Region? How do the cohesive and dispersive forces operate? What social problems result from the population shifts?

The Metropolitan Region. The metropolitan region is a concept which em-

braces the central city or cities and the adjacent and contiguous governmental units. It involves the territory included within the larger community; it includes the area of the daily commuter, the space within which numerous telephone calls are made for a relatively small fee and the sphere within which the daily newspapers circulate. In terms of the larger community, the boundaries of the metropolitan region are not fixed. They are not determined by legislation. They are flexible and depend upon the extent of social contact and interaction within a specified area.

Thus, in any attempt to discuss what is happening within a specific metropolitan region, a primary problem which arises is the determination of the territory involved. The United States Census has adopted the term "standard metropolitan area" and has designated 189 standard metropolitan areas for the United States. These include the central city or cities and the counties contiguous and adjacent, related by socio-economic ties.¹

For specific studies the census concept has been varied somewhat to meet the

¹ As defined by the United States Census of 1950 the New York Standard Metropolitan Area was smaller than the New York Metropolitan Region. The former included only the five counties of New York City and twelve other counties located in the states of New York and New Jersey. The latter generally includes twenty-one counties, located in the three states of New York, New Jersey and Connecticut. (Table I) As defined by the Census of 1960 the New York Standard Metropolitan Area of 1950 has become four metropolitan areas each with its own central city or cities, as follows: (1) New York City, (2) Newark, (3) Jersey City, and (4) the two cities of Clifton and Passaic.

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needs of special investigations. In the case of the Harvard Survey of 1959, for example, the broader concept of the New York Metropolitan Region rather than the New York Metropolitan Area is used, largely because of the position of dominance New York City holds over a large urbanized territory.²

In the Harvard Survey an interesting classification of counties is made. New York city with its five counties (which are also boroughs) is presented as an *entity*. Then four of these counties are added to Hudson County in New Jersey and this total is presented as the *core* or inner highly urbanized center of the New York Metropolitan Region.³ The counties around the core are grouped into two zones, (1) an urbanized *inner ring*, located in proximity to the core and (2) a less urbanized *outer ring*, located at some distance from the core.

For the purposes of this study the New York Metropolitan Region is defined in terms of the Harvard Classification of counties. The income data by counties for 1939, 1947 and 1956 have also been taken from the Harvard study and have been included in the same table with the Census data on population for 1950 and 1960 (Table I).⁴

Social Forces and Population Mobility. No Magi has functioned as a catalytic agent for the population mobility which is occurring within the New York Metro-

politan Region. Also, as indicated herein-before, there has been no Master Plan adopted by the governments of New York City and its suburbs to determine what types of families shall live in various areas. Rather, as has been suggested, the redistribution of people and changes in land use have been the result of a multiplicity of social forces. Social forces are generated within human minds and become significant when translated into action by aggregates of people—groups representing both private enterprise and government. Within any metropolitan area two sets of social forces are functioning, those producing cohesion and those producing dispersal of population. The result of these forces functioning within the New York Metropolitan Region is illustrated in terms of the following data. In the decade prior to 1960 the population of New York City decreased 1.4 percent;⁵ in contrast and in harmony with the trend for the United States, the suburbs boomed.⁶ The population growth for the counties in the inner ring, adjacent to the core, was almost 35 percent; that for the outer ring was 56 percent (Table I). Growth of the inner ring

² Edgar M. Hoover and Raymond Vernon, *Anatomy of a Metropolis* (Cambridge, Massachusetts: Harvard University Press, 1959).

³ What this does is to omit one of New York City's counties—Richmond, better known as Staten Island, which is both less industrialized and less urbanized than the other counties composing New York City.

⁴ Data for this study were obtained from a number of sources, e.g., the United States Bureau of the Census, The Real Estate Board of New York, Inc., the New York Department of City Planning, the Department of Buildings of the City of New York, the Harvard report to the New York Regional Plan Association, and current newspapers.

⁵ With the exception of Los Angeles, California, which annexed territory during the decade, there was a loss of population in the ten largest cities in the United States, as reported by the 1960 Census. These losses ranged from 1.4 percent in New York City to 15.4 percent in Boston. "Census Totals for Major Cities and Nearby Areas," *The New York Times*, June 21, 1960.

⁶ In 1960, for the United States as a whole, population increased 18.5 percent to 179.5 million people; this was about 28 million above the 1950 figure. The suburban population increase was much more rapid, an increase of 47.2 percent within the decade, from a little over 36 million persons in 1950 to a total of 53 million in 1960. In general, suburbs experiencing the most rapid growth were part of the 189 standard metropolitan areas of the United States; three fourths of the suburban population increase, approximately 21 million persons, was in these metropolitan areas. Richard E. Mooney, "Main Census Rise Found in Suburbs," *The New York Times*, June 21, 1960.

TABLE I—POPULATION AND RELATIVE PER CAPITA PERSONAL INCOME FOR SELECTED PERIODS, NEW YORK METROPOLITAN REGION: 1950 and 1960*

Counties	Population (in thousands)		Change 1950-1960		Relative Income Per Capita		
	1950	1960	Number	Percent	1939	1947	1956
New York City	7,892	7,782	- 110	- 1.4	109	106	99
Core	8,348	8,171	- 177	- 2.1	108	105	98
New York	1,960	1,698	- 262	- 13.0	163	149	114
Bronx	1,451	1,425	- 26	- 1.8	84	93	89
Kings	2,738	2,627	- 111	- 4.1	101	91	89
Queens	1,551	1,810	259	16.7	79	93	106
Hudson	648	611	- 37	- 5.6	88	88	84
Inner Ring	3,670	4,946	1,276	34.8	88	97	111
Nassau, N. Y.	673	1,300	627	93.2	74	78	125
Westchester, N. Y.	626	809	183	29.2	93	103	124
Bergen, N. J.	539	780	241	44.7	85	79	109
Essex, N. J.	906	924	18	2.0	102	121	104
Passaic, N. J.	337	407	70	20.8	72	102	86
Union, N. J.	398	504	106	26.6	85	85	109
Richmond, N. Y.	191	222	31	16.2	80	83	87
Outer Ring	1,932	3,023	1,091	56.1	81	84	86
Suffolk, N. Y.	276	667	391	141.5	76	73	72
Rockland, N. Y.	89	137	48	53.2	75	65	70
Orange, N. Y.	152	184	32	20.7	88	88	69
Putnam, N. Y.	20	31	11	56.2	75	83	62
Dutchess, N. Y.	137	176	39	28.7	75	83	62
Morris, N. J.	165	262	97	59.2	81	68	92
Somerset, N. J.	99	144	45	45.3	73	58	89
Middlesex, N. J.	265	434	169	63.8	60	68	83
Monmouth, N. J.	225	334	109	48.4	86	74	82
Fairfield, Conn.	504	654	150	29.6	90	119	114

* Sources: Edgar M. Hoover and Raymond Vernon, *Anatomy of a Metropolis* (Cambridge, Massachusetts: Harvard University Press, 1959); *Population*, Vol. 1 (Washington, D. C. United States Bureau of the Census, 1950 and 1960). The average per capita personal income for each county is based on a percentage of the average for the entire region. (See caption, last column) New York City includes the boroughs of Manhattan, Brooklyn, Queens, the Bronx and Richmond (See captions first column). The concepts of "core," "inner ring" and "outer ring" are based on the Hoover and Vernon Study (See first column). New York County is the borough of Manhattan and Kings County is the borough of Brooklyn (See first column).

counties ranged from 2 percent in Essex, New Jersey to 93 percent in Nassau, New York.

The fastest growing counties, Nassau in the inner ring and Suffolk in the outer ring, are both located on Long Island. As indicated above, Nassau with a population of 673,000 in 1950 had increased to 1,300,000 by 1960, a growth of about 93 percent. Suffolk, located further out on Long Island, with a population of

276,000 in 1950 had increased to 667,000 in 1960, a growth of 142 percent. (Table I)

The Cohesive Forces. People have long been attracted to cities from a variety of motives, not the least of which are the necessity of earning an income or the desire for self-improvement in the form of a better job, better neighborhood, better schools, etc. Recently these stimuli have been responsible for the

migration of the Puerto Ricans from the Islands and the Negroes from the South to New York City, groups of low socioeconomic status for the most part. Today New York City is estimated to have a Puerto Rican population of about two-thirds million and a Negro population of more than one million.

But New York City attracts not only the poor but the well-to-do. The increase in the upper-income groups is attributable, in part at least, to Manhattan's new skyscraper office buildings which accommodate industry's top managerial personnel, although the actual production of the product is generally performed in the suburbs.

The rapid concentration of management developing in Manhattan can be illustrated from the data on construction of new office buildings. In the thirteen-year period, 1947-1960, 125 buildings (39,158,000 square feet) were constructed.⁷ The majority of these are located between 32nd and 62nd streets on the east side of Manhattan. Many persons employed in this area live in proximity to their work. Others commute from the high-income suburbs located in Westchester and other counties on the periphery of New York City.

There is a new trend, however. Commuters are giving up their homes in the suburbs and are returning to apartment living in New York City. For example, two-thirds of the tenants acquiring three-bedroom apartments in a recently built luxury-penthouse building on Lexington Avenue had been living in the suburbs; the other one-third came from luxury apartments in New York City or from some other large city.⁸

The reasons given for migration back to New York City were not so much the attractiveness of the city, although the new high-rental multi-family buildings themselves are increasingly attractive as well as convenient, but rather the many disadvantages of commuting to New York City.⁹ Seemingly, monthly rentals which range from \$80.00 to \$100.00 per room or more for new residential construction in Manhattan do not discourage prospective tenants to whom convenience to the center of New York City is a significant social value.

To no small extent the increasing difficulties of commuting to and from New York City are linked to the current problems of the commuter railroads. The railroads have been operating at a deficit. As a result fares have been increased and service reduced. In some of the other metropolitan regions of the United States, such as Los Angeles as an extreme example, commutation is largely by motor vehicles. But in the New York Region there is a heavy commuter mobility by rail. Thus, the difficulties of the commuter railroads have increased the costs to the commuter both in money and in time and, in turn, are making suburban living less desirable.

The Dispersive Forces. The social forces which motivate low-income families to move into the central city also function to drive the middle-income families, long-time residents of the city, into the suburbs. This is becoming glaringly apparent in many of the neigh-

⁷ W. Clifford Harvey, "Suburbanites Head for the Big City," *The Christian Science Monitor*, May 19, 1961.

⁸ Disadvantages included the cost and strain of commuting, the necessity of buying a second car, traffic blockades into the city, the inconvenience of having to stay overnight in Manhattan during inclement weather and the lack of identification with any one area. *Ibid.*

⁹ Gordon D. Mac Donald, *Competitive Office Buildings in Manhattan, Occupancy Survey*, The Real Estate Board of New York, Inc., Office Series No. 50, New York, May 1961.

borhoods of New York City, but predominately in Manhattan where many of the new, low-income migrants are concentrating. Although the majority of out-migrant families are white, some of the groups migrating to the suburbs are upper- and middle-income Negro families, who have the ability to pay for standard housing in good neighborhoods.

Another activating agent which is responsible for the movement of middle-income families out of New York City is rent control. When the federal rent control legislation terminated in 1950 New York State had its own law ready to apply and in that year the Temporary State Housing Rent Commission was created to administer the law.¹⁰

This legislation has been extended for two-year intervals periodically on the assumption that a housing emergency still exists in New York City. Thus, despite rapid increases in costs of operation of apartment buildings subjected to rent control, rentals have remained relatively static. Owners of such buildings, finding them unprofitable, have razed them and have erected commercial structures or new apartment buildings not under rent control. As an alternative, many owners of rent-controlled buildings have allowed them to deteriorate through overcrowding and lack of maintenance, thus creating blighted areas and slums. In each of these instances the result is fewer apartments available for families of middle income.

Furthermore, in rent-controlled neighborhoods which have remained standard, there is a tendency for buildings to be under-utilized. Because of relatively low rentals in these buildings, one- or two-person families of middle incomes can

afford to continue to live in large apartments, often of five or more rooms. Since generally it is only the families who have lived in a building for a number of years who benefit from rent control, young families are at a disadvantage. Generally they are unable to find standard housing accommodations in the rent-controlled buildings and are therefore forced to move to the suburbs.

As in other sections of the United States, home ownership within the New York Metropolitan Region has been facilitated for the new suburbanite through the activities of the Federal Housing Administration. Long-term mortgages at low rates of interest with small owner-equities have made home ownership possible for families with even limited incomes.

Not the least of the factors contributing to population decentralization is the recently improved highways and throughways constructed, for the most part, with federal and state subsidies. For example, Long Island is serviced east and west by excellent parallel arterial highways, connected at periodic intervals by expressways running north and south.

Good transportation has also made possible the growth of the many industries now located on Long Island. Such companies as Sperry-Rand, North American, Grunman and Republic are representative; so too are the research laboratories such as Brookhaven.

Industries and population moving to the Island have produced increasing land values with concomitant increasing taxes. As a result, the large estates, which a number of years ago were characteristic of the northern shore of Long Island, are being converted into subdivisions; the large potato and truck farms, previously located in the center and along the southern shore of the Island, are also being

¹⁰ *Laws of New York State*, 1946, Ch. 274, as amended; 1950, Ch. 250, as amended.

converted into housing sites. Large estates and farms are thus being metamorphosed into the new, more intensive land uses and Long Island communities are rapidly becoming increasingly urban.

Social Problems and the Flight to Suburbia

A few families moving to the suburbs and a few low-income families moving to central cities would not create social problems. When these movements occur en masse, however, they are likely to produce social concern; when they take place without a plan they are likely to create social disorganization on such a scale that social problems result both within the central cities and outside.

Within the Central City. It is generally recognized that the families living in the core of the New York Metropolitan Region have relatively less purchasing power than those in the suburbs. Quantitative data are now available to support this generalization. Thus, in 1939 the personal income per capita for New York City was 109, indicating relatively high average income compared with the New York Metropolitan Region as a whole. By 1956 the declining position of New York City within the Region was apparent; the figure for that year was only 99, or slightly below the average for the whole area. (Table I) Converted into dollars, in 1956 the Region had a per capita personal income of \$2,502.; the New York City average was about \$25 less.¹¹

The low-income newcomers to New York City are generally blamed for creating the social problems of the community, despite the fact that many of the

problems pre-dated their arrival. For example, because of their relatively low incomes the charge is often made that the majority of Puerto Rican families are on relief. But governmental sources within New York City point out that this is a misconception and that the proportions of families on the relief rolls does not differ greatly for Puerto Ricans as compared with families in the City as a whole. What seems to occur is that the people who come from the Island are seeking jobs not welfare; when jobs are not plentiful on the mainland, there is a migration back to the Island.

What is happening in New York City, however, is that social problems which have been of long duration are now still in existence but on a broader scale. Areas that were middle-income housing less than ten years ago, are below standard today largely because of overcrowding and lack of maintenance; schools in these areas which were previously meeting the educational needs of children from middle-income homes, today are servicing the children from the disadvantaged groups and in many instances achieving a level of education below that for New York City as a whole.

To improve social conditions requires adequate or increasing income within the community. In New York City this is a perennial problem. With the flight of the middle-income families to the suburbs and the movement of some of the industries out of the City, two primary sources of revenue are adversely affected. Furthermore, within the past few decades the rapidly growing suburbs have shown an unwillingness to be annexed to New York City largely because of the inevitability of increased taxes. The relatively high real property tax rate within the City—today approximately \$4.25 per hundred dollars of as-

¹¹ Hoover and Vernon, *op. cit.*, Table 37, p. 165.

sessed valuation—plus a series of other taxes not the least of which is the New York City sales tax, have discouraged annexation. Thus each year the discrepancy between community income and outgo becomes increasingly alarming and each City administration attempts to bridge the gap (somewhat unsuccessfully from the local point of view) in terms of increased assistance from New York State.

In Suburbia. Strangely enough, despite an increase in average incomes, the social problems in the suburbs loom as great or in some instances greater than those in the central city. Perhaps this is due partially at least to the fact that the suburbs are the result of the population sprawl and population is continually moving into areas with either inadequate urban facilities or with none. Furthermore, within the New York Metropolitan Region averages for incomes by counties as a whole are not necessarily representative of the conditions existing within the counties where individual communities are often stratified on socio-economic bases.

Nevertheless, data indicate that the ring of counties around the core of the New York Metropolitan Region represents a rising income level. In 1939 these counties had a relative per capita income of 88; by 1956 this had increased to 111 (Table I). Expressed in dollars, in 1956 the counties in the inner ring had a personal income per capita of \$2,884 or \$292 above the average for the Region. The range was from \$2,250 in the county of Richmond (Staten Island) to \$3,236 and \$3,220 in the counties of Nassau (Long Island) and Westchester (immediately adjacent to New York City)¹² respectively.

Counties located at some distance from the core reported personal incomes per capita of smaller amounts than either New York City or the Metropolitan Region as a whole, attributable in part at least to the fact that these counties are less urban.

Just how quickly facilities have to be expanded in the rapidly growing counties adjacent to New York City can be illustrated by the experience of one school district in Nassau County. In 1949, with a population of 1,100 and a school census of 88, a nineteenth century two-room school house with a staff of two teachers serviced the district. In 1959, with a population of 25,000 and a school census of 7,300, the old school-house had been replaced by a modern structure and the teaching staff had been expanded to 250.¹³

Because most of the employment in the New York Metropolitan Region is still located within the core,¹⁴ despite the decentralization of some industries, there is a tendency to build dormitory communities. One of the best known of these is Levittown, Long Island, constructed on a large scale for families of limited incomes. In the immediate post-war era the homes sold for as little as \$7,900; today, with the change in the price level and with additions and improvements, many of the homes have more than doubled in price.

Recently the families in Levittown have been appealing for an increase in state aid for schools. The community has no industries which can help with the increasing tax burden. It has been estimated that at the peak of its school enrollment the community will have a tax

¹² *Ibid.*

¹³ Terry Ferrer, "Fine Schools but Not High Taxes Wanted," *New York Herald Tribune*, April 27, 1959.

¹⁴ Hoover and Vernon, *op. cit.*, Table I, p. 8.

base of less than \$2,500 per child on which to develop school and other community facilities. Just how low this figure is becomes evident when compared with New York State where the average tax base is about \$15,000 per child.¹⁵ The low tax base in Levittown is one of the results of population homogeneity. Initially, the population was middle income, primarily young married couples who moved to the suburbs for the purpose of raising children. Today many of these children are teen-agers or young adults and the tax sources of the community are proving inadequate for expanding needs.

Homogeneity in the suburbs of New York takes the form not only of communities for middle-income families but also those for upper-income groups. Both to achieve and to perpetuate this homogeneity, zoning ordinances provide for housing sites of not less than one or two acres. In one such community, for example, few of the 5,000 employees of the local industry can live there.¹⁶ Instead, they are housed in adjacent lower socioeconomic suburbs, some of which are without industrial development.

A new homogeneity resulting in some inter-group tensions is developing in the suburbs. The movement of non-whites from New York City to the suburbs has resulted in percentage increases exceeding those of the whites. From 1950-1960, in the counties of Suffolk the non-white increase was 166 percent (21,195 persons), in Nassau 137 percent (24,375 persons), in Westchester 61 percent (23,769 persons), and in Rockland 55 percent (2,544 persons). Today these four

counties have a Negro population of 147,000, twice the 1950 figure.¹⁷

An inter-group controversy which made headlines in national and even international newspapers revolves around Lincoln School in New Rochelle in Westchester County. Here the Negro parents claim that the school districts have been drawn to separate the Negro and white pupils. Local administrators have answered that the pattern of residential living is responsible. Whatever the reason, the concentration of Negro students in one school is apparent and the inter-group tensions continue.

But despite the efforts of Negro parents and social agencies to achieve integration in the schools in the suburbs of New York City, the pattern of residential homogeneity by race continues. And in the suburbs many of the Negro families involved are either middle- or upper-middle income. Nevertheless, the fear of the effect of the incoming Negro families on real estate market values is a significant factor.¹⁸ Thus whole neighborhoods move rapidly from one racial or ethnic group to another and a new homogeneity is established. What effect currently enacted legislation in New York State will have on this trend is yet to be determined. On September 1, 1961 the State's new law against discrimination in housing went into effect. A similar meas-

¹⁵ Clarence Dean, "Negroes Facing Test in Suburbs," *The New York Times*, May 21, 1961.

¹⁶ The attempt of some real estate brokers to perpetrate homogeneity in housing for middle-income families is evidenced in the use of a technique known as "blockbusting." One house in an all-white neighborhood is sold to a negro family or the threat of such a sale is announced. The broker then warns that real estate values are likely to decline and owners of neighboring properties are urged to sell, often at disadvantageous prices. To counteract this activity, in some suburban neighborhoods in proximity to New York City, both Negro and white property owners have organized to keep property values stable in residential areas which are becoming inter-racial. *Ibid.*

¹⁷ Dan W. Dodson, *Changing Population Patterns in New York City*, Four-College Conference on Teaching Education (City, Hunter, Brooklyn and Queens), Working Paper #1, New York City, 1959.

¹⁸ *Ibid.*

ure is pending before the New Jersey legislature; Connecticut adopted such legislation in 1959 and has been implementing it.¹⁹

*Meeting the Problems of
the Metropolis*

No greater barrier exists toward the solution of the social problems within the New York Metropolitan Region than the complexity of the governmental structure. Within the area dominated by New York City are 1,467 distinct political entities each having the power to raise and to spend money, each meeting its own problems in its unique way, each having the right to cooperate or to withhold such cooperation with adjacent communities and with state and federal governments.

The multiplicity of units involved, although a barrier, has not prevented some long-term planning within the New York Metropolitan Region. The Regional Plan Association, a privately-financed organization with offices in Manhattan, has been active for more than thirty years. Its recommendations formed the base for governmental action both in New York City and the adjacent communities.²⁰ Governmental activities, federal, state and local, are changing the appearance of New York City and the out-

lying communities. This is what might be termed piece-meal planning with increasing financial aid from the states involved within the New York Metropolitan Region. Many illustrations of such planning exist. For example, in New York City public housing has become big business. Under the aegis of the New York City Public Housing Authority, 260 buildings were completed during the period from 1947 to March 1960, to house approximately 31,000 families, and an additional 75 buildings were projected.²¹ Since each of the housing projects have covered a number of city blocks, tremendous changes have been effected within the local areas involved.

Both private enterprise and government, working within the framework of the urban renewal legislation, have cleared and redeveloped large areas of New York City. Much of this, under the Title I program of the Federal Housing Act of 1949, includes both housing and other community facilities. Under this program 25 housing projects were completed between 1947 and March 1960 for approximately 8,000 families of middle income, and another 28 housing projects were in process of completion or in the planning stages.²² Some of this newer housing will be part of the Lin-

provided an integrated framework for the regions development. . . . One reason why so many of the plan proposals were adopted was the fact that projects had been drawn in cooperation with local authorities of the various governmental jurisdictions. . . . The very parts of the Regional Plan that were not adopted, such as the proposal for an integrated railroad network and for commuter transportation, have left the New York area its only major problems—congestion in the central business district and aimless urban sprawl in the outlying areas." David Binder, "29 Regional Plan is Paying Off Now," *The New York Times*, July 23, 1961.

²¹Gordon D. Mac Donald, *Apartment Building Construction, 1902-1953, Supplement, March 1960*, Research Department, The Real Estate Board of New York, Inc., New York City.

²²*Ibid.*

¹⁹ *The New York Times*, May 21, 1961.

²⁰ "The Regional Plan of New York, a bold set of recommendations for the comprehensive development of the metropolitan area put forth more than thirty years ago, has in large part been realized to day. . . . Throughout the tri-state region of 7,000 square miles dozens of bridges, express highways, tunnels and parkways envisioned in the Plan have been built. Park lands, civic centers, airports, zoning laws, neighborhood units, industrial parks and bus terminals called for by the planners of the Nineteen Twenties have also become reality. While many of these diverse endeavors were undertaken without coordination by a supra-regional authority, the plan

coln Square development which will include also the new Metropolitan Opera House, the new Julliard School of Music, a new down-town building for Fordham University and other uses resulting in a cultural center for New York City.

Somewhat comparable activities are taking place in other cities within the New York Metropolitan Region. To illustrate, both Yonkers and New Rochelle have active public housing programs and also within these communities government and private enterprise are engaged cooperatively in urban renewal projects. Within the New York Metropolitan Region cooperation between private enterprise and government is evidenced in the rapidly developing new industrial parks and terminals located in the suburbs. The communities involved function through zoning authorities; private developers act as promoters, financiers and managers.

Planning is necessary in order that each industrial park and terminal be an asset from the point of view of both aesthetic values and potential tax revenues. Such developments are having an impact not only on the suburban scenery but also on the tax base, enabling communities of rapidly increasing population to meet the spiraling costs of essential public services.²³ Thus within the New York Metropolitan Region, improvements have resulted from planning, both intra- and inter-community. The decision on

each specific project, however, has been made by individual governmental units, either individually or cooperatively. There is as yet no official regional agency with power to act.

An unofficial agency, known as the New York Metropolitan Council, has come into existence within the last few years. Composed of the mayor of the City of New York and other mayors and heads of governmental units within the Region, this voluntary agency is without formal organization or authority. Some effort has been made on the part of its members to rectify this deficiency, i.e., to obtain a grant of authority with power from the separate governments represented. To date, this effort has not been successful. Nevertheless, the agency is making a contribution; it serves as a channel for communication among its members.

What type of over-all organization could or should be evolved to serve the New York Metropolitan Region is almost impossible to project. Undoubtedly, in harmony with the present trend, some agency will continue to exist to deal with the ever-recurring common inter-governmental problems. Such problems are inherent to the multi-nuclear, integrated clusters of urban and suburban groups which now constitute the pattern of the New York Metropolitan Region. In the future, how these groups will function individually and in relationship to each other may well depend on the type of over-all agency in existence and the long-term planning effected.

²³ Walter H. Stern, "Industrial Parks Change Suburbs," *The New York Times*, July 2, 1961.

Land and Income Distribution In Peasant Countries

By CHARLES T. STEWART, JR.*

INCOME distribution is both an outcome of the operation of an economic system and a determinant of its structure and functioning. Any economic system exists in an elaborate institutional environment, which is necessary for its operation and which one might think would influence its form and function. The hypothesis of mutual interdependence of institutions and income distribution requires empirical testing in a wide variety of contexts. The hypothesis was disputed by Pareto and his followers. Although Pareto's Law, that there is a typical cumulative log-linear distribution of personal income, with a slope of around -1.5, has failed critical examination, no simple or general alternative formulation has gained acceptance.¹

The limitations of the evidence on empirical laws of income distribution are well known. Reasonably good data on personal income distribution are available for only a few nations (predominantly advanced countries) and only for recent decades. They cover a rather narrow range of social and economic environments. Data are limited usually to the upper tail of the income distribution. In order to determine whether there is one rule of income distribution, many rules, or no rule, we must first obtain

reasonably good data on personal income distribution for a variety of backward countries and for the whole range of income distribution.

This paper suggests agricultural land ownership as an indirect measure of income distribution in countries lacking income data, presents some data based on this indirect measure, and discusses some of the implications of the data for income distribution models. It considers the possibility of an equilibrium distribution in the long run and analyzes some dynamic models of income distribution.

Some Doubts About Income Distribution Laws

Why should personal income distribution be the same in countries largely self-sufficient and in countries living by foreign trade? In countries exporting primary products and in countries exporting manufactures and services? In countries dominated by small capitalist enterprises and in countries dominated by state manufacturing and trading monopolies? Do agricultural countries with subsistence peasant farming, with commercialized family farming, and with plantation agriculture all have the same income distribution? Are there no differences between countries with high occupational mobility and wide opportunities for wealth and power, and countries with hereditary social and occupational stratification? Between countries with a unitary modern economy and countries with a dual economy?

Pareto's Law refers to pre-tax income distribution. But in fact there is no such

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¹ E. g., Joseph J. Spengler, "Changes in Income Distribution and Social Stratification: A Note," *American Journal of Sociology*, November 1953, pp. 247-259; D. G. Champernowne, "The Graduation of Income Distributions," *Econometrica*, October 1952, p. 609; G. F. Shirras, "The Pareto Law and the Distribution of Income," *Economic Journal*, December 1935, pp. 663-681; E. C. Rhodes, "The Distribution of Incomes in the U. S.," *Economica*, August 1943, pp. 223-232.

thing; all income distribution data reflect taxes. Incomes are derived in part from inherited property, reflecting inheritance taxes and death duties. The size of the estate in turn reflects taxes paid during the lifetime of the owner. Even pre-tax labor incomes may reflect efforts to shift taxes and their size-distribution may be affected by tax changes. Few if any tax systems are neutral in their impact on the process of income generation, on incentives, savings, investment. Why then should income distribution be invariant with respect to tax structure, or other features of political systems?

One limitation of income distribution law (or laws) seems established. It is applicable only to a unitary geographical region, not to the smaller spatial or functional components of this region, nor to larger areas comprising several regions but themselves loosely organized and economically fragmented. There are lower size-limits to the economic unit below which any income distribution law becomes meaningless. The income distribution within cities, for instance, varies with city size,² with the composition of the city's economic base, and with the invisible items in its balance of payments. On the other hand, loosely-jointed countries of near-continental size, such as India or Brazil, may be too large for verification of empirical laws.

Numerous variables could be used for testing the validity of a single rule or several rules of income distribution. Three are particularly important from the economist's standpoint: area size, economic structure, and stage of devel-

opment. The hypothesis of the relevant size of a region can be tested by comparing income distribution in small and large countries of comparable stage of development and economic structure, and also by comparing distributions for a country and for its component units. The impact of differences in economic structure can be determined by comparing advanced countries of similar size and development but different structure: Denmark and the Netherlands, for instance, versus Belgium and Switzerland. The third hypothesis, that a different income distribution characterizes underdeveloped countries, cannot be tested directly, for such countries lack the necessary data on personal incomes. There is indirect evidence, however, as well as a priori reasons, in support of this hypothesis.

We do know that the personal distribution of various income components is markedly different. Property incomes are much more unequally distributed than are labor incomes.³ Among labor incomes, professional and managerial income distribution differs from that of skilled and semi-skilled labor. Distribution of income is also different by economic sectors, by age-groups, and by other criteria.⁴

Among countries at the forefront of economic development we find wide differences in economic structure: the

²J. J. Spengler, *op. cit.* pp. 248-249; D. G. Champernowne, "A Model of Income Distribution," *Economic Journal*, 1933, p. 345.

³D. G. Champernowne, "A Model of Income Distribution," *Economic Journal*, 1933, pp. 341-345; Clark Warburton, "The Personal Distribution of Income and Wealth," *Indian Journal of Economics*, 1924, pp. 161-171; S. Shiomi, "Survey of the Distribution of the People's Incomes in the Light of the Household Rate," *Kyoto University Economic Review*, July 1933, pp. 58-61; W. L. Crum, "Individual Shares in the National Income," *Review of Economics and Statistics*, May 1935, pp. 121-127.

⁴Morris A. Copeland, "The Social and Economic Determinants of the Distribution of Income in the United States," *American Economic Review*, March 1947, p. 59-60; J. J. Spengler, *op. cit.* pp. 251, 255.

United Kingdom and New Zealand, for instance, implying different compositions of income by economic sector, and different distributions by factor origin. It would be surprising indeed if major differences in sector and factor composition of income were not reflected somewhat in personal distributions.

The differences are even more marked between advanced and backward countries. In some agricultural countries, rent (payments to landlords) accounts for as much as 50 percent of agricultural income and for a share of national income far in excess of its share in any advanced country. Labor incomes are, conversely, a much smaller share of national income. The wage structure in backward countries is quite unlike that in advanced nations, with a much larger gap between the wages of skilled and unskilled labor. The occupational structure, as well as the sectoral distribution of labor, shows wide divergence by stage of development.

Land and Income Distribution in Agrarian Countries

Many underdeveloped countries which lack data on income distribution have good information on the size-distribution of agricultural landholdings. The measurement of land surface can be relatively direct and unambiguous even in backward countries. Whatever the shortcomings of this measure as an index of personal income distribution, it may compare favorably with existing measures in many advanced countries which grossly understate many forms of income—in particular, production for household use.

Land distribution is a fair approximation to income distribution in agriculture if (1) agriculture is predominantly subsistence, (2) farm tenancy is rare, (3)

there is no large class of agricultural wage laborers and (4) peasants have no major supplementary sources of income. If the bulk of the population, close to 80 percent of the total, is engaged in agriculture, most of the non-agricultural population probably falls within the upper tail of the personal income distribution. Along most of the income curve, therefore, the distribution of peasant household incomes is equivalent to the distribution of all incomes and the distribution of landholdings by size is a reasonable approximation to the distribution of peasant household incomes.

Pre-World War II data were obtained for a number of European countries fulfilling the conditions listed above. It was possible to ascertain in some cases that there were no significant systematic differences by size of landholding in soil fertility or in cultural methods (including intensive and extensive margins of cultivation). There were systematic differences by size of holding in wage income obtained by employment elsewhere, in wage and other costs incurred per hectare in payment to non-family workers, and in indebtedness per hectare. Differences in wage incomes and wage payments tend to narrow the income differentials suggested by farm-size differentials, whereas differences in indebtedness have the opposite effect. There were systematic differences also in idleness and possibly also in leisure. Since the leisure component of subjective income is not measured in personal income distribution statistics, it can be excluded from consideration. The question is relevant, however, for part of the time not devoted to agricultural and related pursuits is used in household manufacture for household use. There is not enough information to indicate the probable impact of this component of income on the

income distribution as measured by farm size-differentials.

The accompanying charts serve as suggestive illustrations. They are not adequate in number nor in some cases in quality to test hypotheses on income distribution. The graphs measure along the vertical axis, in the Pareto manner, the total number of holdings above specified sizes. The sizes of holdings are indicated on the horizontal axis.

The slope of the main part of the distribution in every peasant country meeting the requirements of low tenancy, limited commercialization, and small agricultural labor class is much steeper

than the central value of -1.5 postulated by Pareto. In most cases the slope is well in excess of -2 .

Bulgaria was a typical peasant land, with 80 percent of the population engaged in agriculture, predominantly on a subsistence basis.⁵ In 1934 only 2.2 percent of the holdings were rented; 28.9 percent were partly owned and partly rented but rented land accounted for only 10 percent of the total. Wage labor was of no significance. Figure 1 reveals the consequences of agricultural population growth without corresponding growth in farmland area under a system of divided inheritance. Between 1897 and 1934 there was a large increase in the number of dwarf holdings and a very noticeable reduction in the number of larger holdings (10 to 30 hectares). In 1934 the legal maximum holding, with few exceptions, was 30 hectares.

Latvia (Figure 2) illustrates the effects of differences in development. Largely for historical reasons, the eastern province of Latgale remained almost exclusively agricultural, and predominantly subsistence in nature.⁶ The western prov-

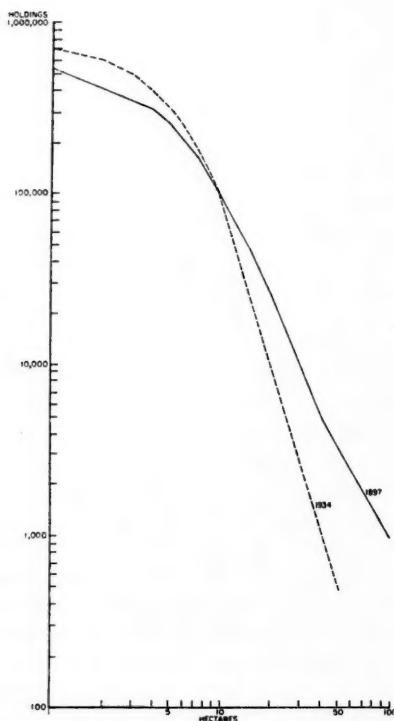


FIGURE 1—Cumulative Size Distribution of Agricultural Landholdings in Bulgaria, 1897 and 1934

⁵ George C. Logio, *Bulgaria Past and Present* (Manchester England: Sherrat & Hughes, 1936) pp. 179ff.; J. S. Molloff, *Die Sozialökonomische Struktur der bulgarischen Land-wirtschaft* (Berlin, Germany: Weidmannsche Buchhandlung, 1936); Athanasie Iannaroff, *La Bulgarie Economique* (Lausanne, Switzerland: Petter, Giesser & Held, 1919) pp. 19ff.; European Conference on Rural Life, *Bulgaria* (no. 28), (Geneva, Switzerland: League of Nations, 1939); W. E. Moore, *Economic Demography of Eastern and Southern Europe* (Geneva, Switzerland: League of Nations, 1945) pp. 25-252; O. S. Morgan, editor, *Agricultural Systems of Middle Europe: A Symposium* (New York, New York: The Macmillan Company, 1933), Chapter 2, "Bulgarian Agriculture," by J. S. Molloff, pp. 45-85, especially pp. 50-52; *Annuaire Statistique du Royaume de Bulgarie, 1909*, (Sofia, Bulgaria: 1910).

⁶ In all Latvia, 7.4 percent of the holdings were farmed under cash rentals and 1.5 percent on a share rental basis. Non-family workers were 16.3 percent of the total in 1929. Latvia annually imported considerable numbers of seasonal farm work-

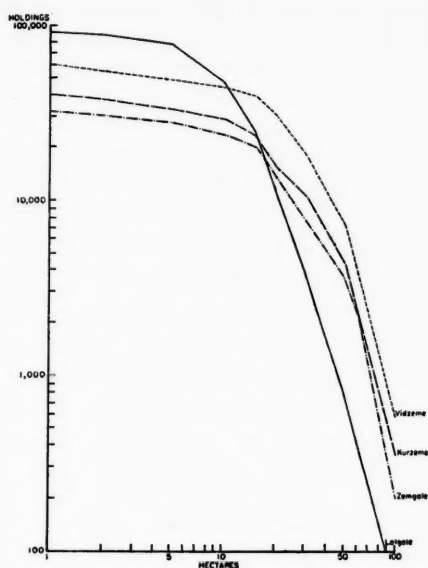


FIGURE 2—Cumulative Distribution of Agricultural Landholdings in Latvia, 1929

inces, with a much smaller percentage of their populations engaged in agriculture and with considerable commercial developments in farming, reveal size distributions quite different from that for Latgale. All three advanced provinces had much smaller numbers of small farms and much larger numbers of medium and large farms. A more significant difference may be the fact that the distribution in the advanced provinces does not fall mainly along a single straight line, as it does for Latgale and other peasant areas. The maximum size of holdings in Latvia was 50 hectares and the minimum subdivision through in-

ers, almost none of whom went to Latgale. See *Latvijas Statistiskās Gada Gramata 1937/1938* (Valsts Statistika Parvalde; Riga), pp. 123-124; W. E. Moore, *op cit.*, pp. 218-220; European Conference on Rural Life, *Latvia* (Geneva, Switzerland: League of Nations, 1939).

heritance was set at 10 hectares. In the western provinces the slow rates of population growth, farm commercialization, and urban employment opportunities made such a scheme feasible.

In Lithuania (Figure 3) the maximum holding was 150 hectares with some ex-

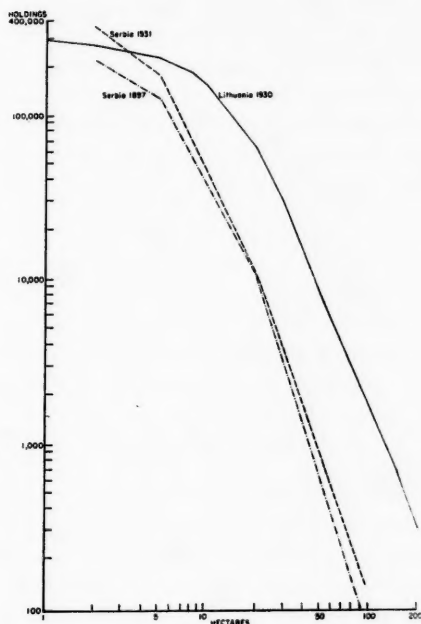


FIGURE 3—Cumulative Size Distribution of Agricultural Landholdings: Lithuania (1930) and Serbia (1897 and 1931)

ceptions.⁷ Only 7.8 percent of the holdings over one hectare in size were tenancies. There was some migratory wage labor to German lands and to Latvia. Nevertheless Lithuania was, like

⁷A. Simutis, *The Economic Reconstruction of Lithuania after 1918* (1942), pp. 25-31; Jurgis Kriksčiunas, *Die Litauische Landwirtschaft* (Kaunas: Zemes Ukio Rumai, 1933); W. E. Moore, *op cit.*, pp. 221-222.

Serbia,⁸ a good example of an agrarian subsistence economy, but with less pressure of population on available land. Serbia had little farm tenancy or wage labor. Serbian law prohibited alienation of a "minimum household" including some 2.8 hectares. It did not, however, prevent subdivision through inheritance below this limit.

Land distribution data exaggerate somewhat the inequality of income distribution since they fail to include the supplementary income of dwarf farm households from the sale of surplus labor, or to deduct the costs of hiring labor from the income of large farms. With these adjustments the household income distribution slopes would be even steeper than those for farm size and farther from the Pareto norm.

A second adjustment which should be made in deducing income distribution from the distribution of farm holdings refers to farm tenancy. The relative incomes of tenants and landlords are more unequal than data on land distribution alone would indicate. There may be no systematic way of adjusting for rent payments and receipts by size of farm, however. It is true that the larger holdings are rarely rented and that the owners of such holdings as a group are likely to be landlords rather than tenants on a net basis. It is hard to generalize about the smaller farms. Dwarf holdings may be predominantly owned rather than rented. The bulk of rented land may be in medium rather than dwarf holdings.

⁸ Ranko M. Brasic, *Land Reform and Ownership in Yugoslavia 1919-1953* (New York, New York: Mid-European Studies Center, Free Europe Committee, Inc., 1954); M. N. Lukitchevitch, *L'Agriculture en Serbie* (Belgrade, Yugoslavia: Imprimerie d'Etat du Royaume de Serbie, 1911); J. Tomasevich, *Peasants, Politics, and Economic Change in Yugoslavia* (Stanford, California: Stanford University Press, 1955).

A separate study of each country or province would be required to determine the discrepancy between land distribution and income distribution brought about by tenancy.⁹

Is There an Equilibrium Distribution?

The above data are useful in determining whether or not personal income distribution is invariant by stage of economic development within the limitations of the method of measure. A further question, whether there is an equilibrium distribution of income by stage of economic development (whether invariant or not) is more difficult to submit to the arbitration of facts. Changes in political boundaries, major land reforms, devastating wars, obscure or prevent the attainment of an equilibrium. Of the countries studied, only Bulgaria offers a reasonably long historical series in some detail.

The existence and nature of equilibria must be posited mainly in theoretical terms. Pareto considered three reasons for a "natural" distribution of income: (1) the distribution of human abilities,

⁹ Tenancy and wage labor are the main adjustments which must be made to convert land distribution in these countries. Other adjustments, however, are required to make income distribution in agrarian countries and in advanced industrial countries even roughly comparable. In particular, the household unit is not identical in all countries. Advanced countries with high incomes, old age pensions, and other forms of social security, have a relatively large number of separate household units in the lower portions of their income distribution, including many households without economically active members. Agrarian countries, for cultural as well as economic reasons, have few such households of isolated individuals, old couples, and the like. See Irving B. Kravis, "International Differences in the Distribution of Income," *Review of Economics and Statistics*, November 1960, pp. 408-416. Incidentally, the conclusion reached by Kravis, that there is some tendency for the degree of equality to be positively correlated with the level of per capita income, is not supported by the data given above, which indicate substantially greater equality in agrarian countries than expected by Pareto, or found in advanced countries.

(2) chance, and (3) the organization of society. He concluded that the distribution of human abilities was the explanation of the invariance he believed he had found in income distribution.¹⁰

Even if we did not question the invariance of either income distribution or the distribution of innate abilities, it would be possible to question the invariance of the relation. The distribution of *developed* abilities may be more important than that of *innate* abilities. The former are not invariant, whatever one may think about the latter. The range of abilities, whether innate or developed, of greatest survival and success value varies considerably by culture and by stage of economic development. An invariant distribution of innate abilities does not preclude different equilibrium distributions of income.

The impact of social and political systems on personal distribution is undeniable. Within the terms of reference of a peasant economy, the main influences on the equilibrium distribution of farm land are laws and customs on property and inheritance, and land reform.

Historical evidence that there is no unique equilibrium land distribution in an agrarian country is provided by many instances of land reform. Which is the equilibrium distribution: before, or after, a Draconian land reform? Neither can claim to be a general equilibrium distribution. The distribution of income and wealth resulting from the unhampered operation of an economic system seems to be much more unequal than the political distribution of power in a representative government. In a broad-based government, therefore, political power is

used to accomplish some redistribution of wealth and income. In advanced countries it is done continuously through taxation, transfer payments, and government services: in backward countries, periodically through land reform. Looked upon as a periodic form of secondary distribution, land reform is the turning point in a redistributive cycle between economic and political equilibria.

If we can speak of an equilibrium distribution in agrarian societies, it must be in terms of a redistributive cycle many times repeated. But history will not stand still. There are indeed some asymmetrical consequences from such a cycle itself. Land reform, usually setting a maximum limit to the size of holdings, may force large landowners to direct their energies and capital elsewhere, possibly providing a stimulus to commerce and industry.

The effect of inheritance, if primogeniture prevails, is a decreasing number of holdings. The result, depending upon the conditions of society, is a growing number of landless agricultural wage laborers, or tenant farmers, or serfs. Partial exceptions occur if there are ample opportunities for emigration or for industrial employment or if farm holdings without direct heirs revert to the state, which distributes them among landless peasants. Although primogeniture assures great short-run stability in farm size distribution, it will not by itself ever lead to a long-run equilibrium.

The trend of distribution is quite different with equal inheritance, the custom generally prevailing in peasant Europe. The tendency is towards a multiplication of holdings and, when population is increasing, toward dwarf peasant farms. As some holdings become too small to support a peasant family, there is an incentive to supplement owned land through tenancy, or income through agricultural

¹⁰ Vilfredo Pareto, *Cours d'économie politique* (Lausanne, Switzerland: Librairie de l'Université, 1896), pp. 304ff.

wage labor. Income may also be supplemented through labor outside agriculture, including the development of home industries. The exodus from agriculture and the development of tenancy and agricultural wage labor are much less pronounced than with primogeniture, in part because divided inheritance slows down the accumulation of large properties. Accumulation proceeds nevertheless. Dwarf farms are saddled with heavy indebtedness, leading to frequent forced sales and foreclosures. Legislation setting maximum limits to the size of any one owner's land holdings, and/or reserving a minimum size farm from sale or foreclosure for debt, can only slow down the process. At the lower end of the farm-size distribution, equilibrium can be reached only on Malthusian terms. At the upper end there is no apparent absolute limit to growth in size of property holdings if a system of land tenancy develops.

Inheritance, whatever its form, will in time disturb any initial distribution of land holdings. In a closed agrarian economy, widespread tenancy will develop. The alternative of a large class of landless or nearly landless agricultural wage laborers is available only in an open society with commercialized agriculture. An economic equilibrium distribution may never be reached because, as it is approached, there will be mounting pressure for land reform unless the society in the meantime has lost its agrarian character or reverted to feudalism.

In subsistence agriculture the range of incomes is small. First, the maximum size of peasant farms which can be worked by a peasant family is not many times larger than the smallest which will provide a bare living. The larger peasant farms are no more specialized than the smallest. Second, this lack of specialization sets limits to the managerial unit

even with hired workers. The peasant principle of hereditary management, when accompanied only part of the time with inherited ability, makes continued accumulation of land for many generations highly improbable. Only with the rise of hired managers, implying commercial agriculture, can a tendency for increasing size of holdings develop. Even then, the ability to hire competent managers (assuming they are available) is not invariably handed down from father to son. Third, without commercialization, the owner of even a modest holding soon can find no further use for the agricultural output of workers whom he pays in kind. He can benefit from owning additional land only if he rents it to tenants in return for labor services. This sort of arrangement is typical of feudal institutions. Without a developed market, opportunities for economies of scale and specialization are limited. Without feudal institutions, marked income inequality in a closed agrarian society is impossible.

The role of inheritance in determining the personal distribution of income is much more important in agrarian societies than in urban-industrial societies. The reason is twofold: first, the range of occupational choice in agrarian society is extremely limited and, in particular, the opportunities for income from labor alone. In the second place, income is obtainable from application of peasant labor to farmland in fairly fixed proportions. The amount of land a household can use therefore determines fairly closely its gross income from agriculture and (in the absence of tenancy, hired workers, or indebtedness) its net income as well. It is not too much to say that the influence of land distribution on incomes overrides the influence of ability differentials.

Is there an equilibrium distribution of incomes in an agrarian society? There are constraints in subsistence agriculture placing narrow limits on the range of income variation. Feudalism, tenancy, commercialization, can all relax these constraints. There are conflicts between economic and political distributive tendencies which may result in redistributive cycles. We cannot, however, maintain that there is some particular equilibrium distribution characterizing a wide range of peasant economies.

The Models of Rashevsky and Zipf

By contrast with Pareto, who describes an equilibrium distribution, Rashevsky postulates a model system initially in equilibrium whose income distribution becomes progressively further removed from equilibrium with the passage of time until equilibrium is restored by a social upheaval.¹¹ Rashevsky's model, however, does not require any change in the slope of income distribution. Disequilibrium is generated by a change in the distribution of human types by income groups as a result of hereditary drift plus lack of mobility between socio-economic classes. Given the dissimilarity of parents and progeny, in time a diminishing proportion of the members of socio-economic Class I have the genetic attributes of their class and more and more members of Class II (all others) have the genetic attributes of Class I. Where both upward and downward mobility exists, the system may be stable; where mobility is restricted, capitalism

gives way to collectivism (public ownership of land and other productive resources).

In terms of Rashevsky's model, land inheritance in a peasant economy imposes a great barrier both to upward and to downward mobility. Under divided inheritance, mobility (particularly downward mobility) is based mainly on the number of children, not on ability or its absence. Limitations on the size of farms act as barriers to mobility and as constraints on the degree of inequality. The lesson we should draw from Rashevsky's model, if not from history, is that equilibrium cannot be defined in terms of the slope of the income distribution alone. It makes a great deal of difference whether individuals are fixed in their position along the income scale or are free to move up or down. Tenancy, hired labor, commercialization all increase the short-run stability of a given land ownership distribution by relaxing the connection between ownership and income, introducing some flexibility in individual or household income.

The distinction between our model and that of Rashevsky is, first, that ours does not postulate the existence of "classes," however defined, but only differences in the number of children (in cases of divided inheritance) and differences in relevant abilities between parents and offspring when there are no ownership barriers to income differentiation among individuals. (Rashevsky's conclusions could well be reached without the use of his expository device of a two-class society). Second, our model is not expressed in the antithesis of capitalism and collectivism. Rashevsky's alternative of public ownership is less realistic historically than land reform. Our model therefore results in cyclical changes in income distribution whereas his, as far as

¹¹ Nicolas Rashevsky, *Mathematical Biology of Social Behavior*, revised edition, (Chicago, Illinois: University of Chicago Press, 1959), Chapters XXIV and XXVI; also, Nicolas Rashevsky, *Mathematical Theory of Human Relations* (Bloomington, Indiana: The Principia Press, 1947), chapters XIV, XV, XIX, and XX.

he has pushed it, leads to the analytical dead end of public ownership.

Zipf also develops a model of equilibrium income distribution.¹² Like Rash-evsky, he postulates two classes, the elite and pariah classes, each with its own distributive mechanism and equilibrium slope of income distribution. In the pariah class, income distribution is based on the demand for and supply of labor and skills. Equilibrium distribution in the elite class, however, is expressed in political terms. The income of any stratum in the elite structure must be such as to elicit its support for the stratum above it while protecting it from revolt by the stratum beneath it. Equilibrium and disequilibrium are also described in terms of status complacency and status worry. The slope of equilibrium income distribution for the elite class is -2 .

Zipf's model may describe income distribution in a peasant economy with feudal society ripe for land reform, with the peasant masses landless. It is not relevant to the examples used in this article, which were chosen from countries where peasant land ownership was the ruling pattern.

Conclusions

Pareto's law does not hold even approximately for peasant economies. Land, and income, distribution by household in the countries examined is far more equal than Pareto's law would lead us to expect. Equilibrium distribution of income cannot be defined solely

in terms of slope; it must also specify the extent of individual mobility (both upward and downward) along the slope of income distribution. The mechanism of inheritance is continuously revising the land, and income, distribution in peasant societies. This revision in turn builds up periodic pressures for land reform, which reverses some of the cumulative effects of inheritance.

It is tentatively concluded that there is more than one equilibrium distribution of income, determined by economic structure and stage of economic development. There is also more than one political equilibrium distribution of power. For particular juxtapositions of political and economic systems there may be determinate redistributions of income derived from economic activity through the agency of political power.

Assuming regularities in the personal distribution of incomes, there may be as many rules as there are distinct economic systems and political systems and combinations thereof. If the number of rules is sufficiently small to be of some value for theory, the limitation in number must be sought via a typology of economic and political systems. Even if the number of separate systems with distinctive implications for income distribution is quite large, correlations between economic and political systems may effectively limit the possible types of political-economic equilibria and of redistributive cycles of income distribution.

Further effort should be made to measure income distribution in a wider range of societies before passing final judgment on the validity, and the value, of income distribution rules and models.

¹² See George K. Zipf, *Human Behavior and the Principle of Least Effort* (Cambridge, Massachusetts: Addison-Wesley Press, 1949), chapter XI.

Political Values and Population Density Control

By JAMES G. COKE* and CHARLES S. LIEBMAN**

ONE OF THE most striking features of suburban expansion around America's largest cities during the past decade is the low density at which residential areas have been developed. No matter what motives lie behind this phenomenon, many American families have unquestionably aspired to the possession of a single-family, detached dwelling unit on a spacious lot. Even the meaning of the word "spacious" has changed over a relatively short time span. Before the second World War, 10,000 square feet was considered Arcadian by all but the direct heirs of the robber barons; an acre lot would have been considered as ducal as caviar. Now one expects to encounter the larger lot sizes.

This new suburban pattern has not occurred through the operation of simple market forces. Many builders and subdividers would have chosen to develop their tracts at higher densities, had they been free to do so. The fact is that the political process of suburbia has been one of the significant factors in creating the physical pattern. Since much of the suburban residential construction in the 1950's has taken place in municipalities having zoning ordinances, it seems clear that municipal governing bodies and planning commissions have been singularly responsive to the demands for more space. They are quite willing to write increasingly larger minimum lot sizes into their zoning regulations.

This political process is typified by a recent decision in one suburban Philadelphia municipality to rezone a tract of land constituting about one-third of its total land area. In interviewing some of the interested parties, one respondent made the following comment:

"The first zoning ordinance in the township was passed in 1927 in order to keep out row houses. A builder was threatening to construct row houses, and this is what stirred the people up. An ordinance was passed zoning that particular area for 10,000 square foot minimum lot size. There was also a good deal of open area at that time which was not built up. The township created a new district of 30,000 square feet minimum lot size to protect the large estates in the area from someone moving in and building small homes next door to them. At that time 10,000 square feet seemed like a great deal of land. It was thought that when the district zoned for 30,000 square feet was ready for development the lot size restriction would be dropped to 18,000 or maybe 10,000 square feet. After the second world war, however, as the land was ready for development the Civic Associations (neighborhood groups of home owners) opposed dropping the 30,000 square foot minimum and are now fighting to raise the minimum lot size."¹

Instances of this kind are not uncommon. We believe that they are expressive of the values of American urbanites. Therefore, the purposes of this paper are (1) to document density trends in the suburban area around one large city,

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¹ Interview with Edwin B. Mahoney of Mahoney Construction Company, former member of the Lower Merion Planning Commission, and founder of the Main Line Builders Association, October 12, 1960.

(2) to clarify some of the salient values that lead to powerful pressures for low density development, (3) to evaluate the centrality of minimum lot size requirements in achieving the values and (4) to investigate the question whether large minimum-lot size requirements are *in fact* efficient means for the realization of the values.

Density Trends

To illustrate the drive toward lower densities, consider residential building in Delaware County, Pennsylvania, during the 1950's. In this suburban county, which adjoins Philadelphia on the southwest, an average of 3500 lots per year received subdivision approval. Although only 5.2 percent of the lots approved in 1952 were a half-acre or larger, this percentage rose to 15.8 percent in 1955 and to 37.1 percent in 1958. These data are for *all* residential building. When one considers single-family dwellings alone, which accounted for two-thirds of the total number of lots, the continuous increase in lot size is equally apparent. From 1951 to 1958, single-family residential areas were developed at an average gross density of 1.91 lots per acre. In 1958 the average density was 1.25 lots per acre.²

Delaware County is somewhat atypical of the whole Philadelphia suburban area in that it is the only county with more than a miniscule amount of new multi-family construction. However, its single-family developments are like those in the other three suburban counties. Throughout the Philadelphia suburban area in Pennsylvania, lot sizes of one-half acre or more have become standard. In fact,

76 percent of all zoned residential land, developed and undeveloped, outside the city of Philadelphia is zoned for these densities. Nearly half of the zoned residential land (45 percent) requires acre lots or larger. One-quarter acre zoning accounts for only 10 percent. Delaware County, where 47 municipalities have zoning ordinances, shows a similar pattern. Forty-seven percent of the total land area zoned for residences requires acre lots or larger, 10 percent requires half-acre, 9 percent quarter-acre, and 34 percent allows lot sizes under 9,000 square feet.³ It goes without saying that the last category exists primarily as confirmation of development that took place before 1940.

The Values Underlying Large Lot Zoning

Several efforts have been made to understand the underlying goals and preferences of the people who choose suburban, low-density residential locations. A recent study of the Flint metropolitan area confirmed prior findings that "the movement to the suburbs is largely a search for space and privacy."⁴ Moreover, persons who moved into the fringe areas of Flint from the central city have larger lots than residents who lived only in the fringe.⁵

In the Philadelphia area, persons who had purchased \$14,500-\$16,000 houses in a large suburban tract development were asked what they were looking for when shopping for a house. The feature

² Delaware County Planning Commission, *Subdivision in Delaware County: 1951-1958*, Information Bulletin 12, Media, Pennsylvania, July, 1959, pp. 6-7.

³ Fels Institute of Local and State Government, *Planning Measures and Controls in Southeastern Pennsylvania, Part Three: Zoning*, Philadelphia, Pennsylvania, 1960, pp. IV37-IV41.

⁴ Basil G. Zimmer and Amos H. Hawley, "Suburbanization and Some of Its Consequences," *Land Economics*, February 1961, p. 88. See the same study for a bibliographic note on similar conclusions reached by others.

⁵ *Ibid.*, pp. 88-89.

most frequently mentioned was "size of lot—space between houses."⁶ The author of the study comments on this reply as follows:

"For example, the response in relation to size of lot and space of ground is very significant. It ties in closely with what was learned in a much more positive manner in the playbacks. A major motive is the desire for privacy, the attempt to get away from congested neighborhoods and close neighbors."⁷

The fundamental problem with conclusions like these is the ambiguity of the terms of reference, particularly "privacy." The values of "space and privacy" are by no means undifferentiated. The phrase may simply mean enough room for adequate light and air; it may mean privacy from one's next-door neighbor; it may mean complete exclusion of certain classes of potential neighbors.

There is even some conceptual difficulty in linking the two words "space" and "privacy" in one phrase, as if they were interchangeable. If one accepts Louis Wirth's analysis of urban life,⁸ privacy is most likely to be attained in the very location where there is no space,

i.e., the densely-populated inner city. The ultimate in privacy can be achieved through the anonymity of secondary contacts, which in large, dense settlements replace primary group relationships. Clearly, few people value highly a way of life in which one is isolated from other people except through impersonal, segmented, and transitory contacts. In a perceptive analysis Herbert Gans maintains that most city dwellers and most suburbanites pursue the same way of life, which he calls "quasi-primary." Gans states, "I use this term to characterize relationships between neighbors. Whatever the intensity or frequency of these relationships, the interaction is more intimate than a secondary contact, but more guarded than a primary one."⁹

In short, we are suggesting that low population densities are widely believed to be instrumental in achieving a "quasi-primary" life style. Low density is also assumed to maximize other goals. Instead of using "space and privacy" as an explanation we would suggest a line of reasoning based upon an analysis of other values.

Three values can be identified that become expressed in large minimum lot size requirements and low density development: (1) amenity, (2) tax base, and (3) neighborhood homogeneity. To put the matter colloquially, many people would like to live in an attractive neighborhood where the taxes are low and the neighbors congenial. Such a neighborhood would be instrumental in pursuing the quasi-primary way of life. Let us now consider how minimum lot size zoning

⁶ Ralph Bodek, *How and Why People Buy Houses* (Philadelphia, Pennsylvania: Municipal Publications, Inc., 1958), p. 23. This feature received 15.2 percent of the total mentions. Interestingly enough, the horizons of the buyers interviewed seem to be restricted to the lot and the structure itself. Community-related features (nearness to schools, nearness to shopping areas, nearness to place of employment, and "good neighborhood") received only 7.6 percent of the total mentions. The remaining mentions (77.2 percent) were features of the structure itself, such as closet space, modern kitchen, and number of bedrooms. Reading these results in connection with a later description of the results of a projective survey of dwelling unit types (pp. 31-36), we interpret them as evidence that buyers are not unconcerned about their surroundings. Rather, they use the price and appearance of the house-and-lot as a shorthand for the type of people they will have as neighbors.

⁷ *Ibid.*, pp. 23-24.

⁸ Louis Wirth, "Urbanism as a Way of Life," *American Journal of Sociology*, July 1938, pp. 1-24.

⁹ Herbert J. Gans, "Urbanism and Suburbanism as Ways of Life: A Re-evaluation of Definitions" (undated, 31 pp., mimeo.). This paper will appear in Arnold Rose, editor, *Human Behavior and Social Processes* (tentative title), (Boston, Massachusetts: Houghton Mifflin Company, 1961).

is assumed to contribute to the creation of such neighborhoods.

Amenity. The value of amenity can be discussed in terms of a number of specific factors, the most important of which are visual beauty, prevention of heavy traffic, and utility in child-rearing practices and leisure time activities. Any close observer of suburban politics knows that the slogan "Let's keep X Township green!" does not refer to soil conservation practices. It means the encouragement of a development pattern in which the houses do not dominate the lots in a visual sense. Reasonable men may differ about the precise minimum lot size that will produce the result but it would probably center about one-half acre.

Furthermore, the large lot contributes to amenity by protecting residential areas served by the usual type of street pattern against the noise and dangers of heavy vehicular traffic. The Detroit Metropolitan Area Traffic Study produced data showing that the average weekday number of person trips per acre of residential land declines as one moves out from the core of the Central Business District.¹⁰ The decline is particularly striking beyond the nine-mile ring, where density is relatively quite low.

Finally, the large lot provides desired space for leisure activities and for child play that can be supervised by mothers who are engaged in other household tasks. Indeed, low density development often provides the rationale for opposing public expenditures for *public* amenities. ("Why should we be taxed for parks? Everybody around here lives on acre lots!")

Tax Base. A second value that seeks to express itself through minimum lot zoning is maintaining a high total property valuation relative to municipal services performed. This, of course, would tend to keep each homeowner's property tax bill at a minimum.

Lot size is related to the tax base in two ways. First, it is assumed that the larger the lot the fewer the municipal services required. Thus, total municipal costs are lowered. For example, on-site sewage disposal facilities are almost invariably provided for houses built on half-acre or larger lots. In 1958, 40.3 percent of the approved lots in Delaware County had no public sewers.¹¹ This figure corresponds very closely to the percentage of approved lots that were half-acre or larger in 1958. The installation of on-site facilities costs the municipality nothing. Local governments may avoid incurring any expense for other public improvements when densities are sufficiently low: for example, street lights, sidewalks, and curbs. Street maintenance and police and fire protection are obviously less costly with lower population density. Most important, however, are school costs which in the Philadelphia suburban area consume about two-thirds of total property tax collections. The lower the density the fewer school age children there will be and the lower the costs of the school system. The attempt to forestall public expenditures may be both an ideological commitment to small, limited government and a way to minimize capital improvements. The "get-going" costs of capital improvements may be quite substantial for a municipality experiencing rapid population growth. If low density zoning poli-

¹⁰ J. Douglas Carroll, Jr. and Howard W. Bevis, "Predicting Local Travel in Urban Regions," *Volume Three: Papers and Proceedings of the Regional Science Association*, 1957, p. 190.

¹¹ Delaware County Planning Commission, *op. cit.*, p. 8.

cies can impose limits on expansion, the municipality may be able to maximize the difference between average per capita costs and the marginal costs per new resident.

Secondly, lot size is related to the tax base in terms of costs per dwelling unit relative to tax income. This is considered to be much more significant than the simple reduction in total municipal costs. A key assumption is made: i.e., the price of a home is roughly proportional to the size of the lot. The more expensive the home, the higher the assessed value of the property and the greater the tax revenue derived from each lot. Since municipal services can be costed on a per-lot basis, then the larger the lot, the lower the tax rate necessary to provide a given level of services.¹²

The tax base value is of doubtful legal validity. One court, for example, refused to uphold acre zoning where the purpose of the regulation was to maintain a low tax rate, although the opinion notes that:

"The expense that might be incurred by a town in furnishing police and fire protection, the construction and maintenance of public ways, schoolhouses, water mains, and sewers and other public conveniences might be considered as an element more or less incidentally involved in the adoption of a zoning by-law that promotes the health, safety, convenience, morals or welfare of the inhabitants of the town without imposing any unreasonable and arbitrary burden upon the landowners."¹³

¹² There are some fascinating variants of this argument. One runs substantially as follows: the more expensive the house, the higher the income of the purchaser. People with high incomes do not breed as rapidly as people with low incomes. Fewer children per dwelling unit impose a lighter burden on the schools and their parents might just have enough money to send them to private school. This would be a tax windfall of a high order.

¹³ 311 Mass 565, cited in William C. Smith, "Municipal Economy and Land Use Restrictions," *Law and Contemporary Problems*, Summer 1955, p. 486.

Municipal governing bodies, therefore, will not word zoning regulations in explicit tax base terms. Nevertheless, the value is verbalized unblushingly in the suburban press and at public meetings. A recent public hearing was held in one Philadelphia suburb over a proposed rezoning of a large tract of land from a minimum lot size of 33,000 square feet to one and two acres. An opponent of the upzoning noted that since the land was presently vacant the municipality was not deriving any tax revenue from it. He protested that upzoning to two acres would freeze development but stated that he was prepared to build homes of \$30,000 or more on the 33,000 square foot lots. At this point one member of the municipal governing body explained that the municipality would lose money if development were permitted in that particular area because the anticipated tax revenue from the proposed homes would not cover the cost of services to new residents. Another opponent of the upzoning seized on this statement and asked whether this was the basis for the zoning change. The chairman of the municipal governing board then intervened, denied that this was the case and dismissed the whole matter as irrelevant.¹⁴

At a public hearing in another suburban Philadelphia municipality a representative of the local Board of Realtors made the following statement:

"There is little, if any, vacant land left in Radnor Township where anything but larger houses of \$25,000 or greater valuation can be built. The acre requirement generally imposed on these unbuilt areas, at

¹⁴ Notes taken by one of the authors at a Public Hearing of the Board of Commissioners of the Township of Lower Merion on recommendation of the Planning Commission to Amend or Modify the Zoning Ordinance, October 1960.

any fair price for the land, together with the cost of improving such land, makes the cost of the finished unit economically impossible to construct any but a home of substantial price. Such houses pay at least their share of Township costs and their construction should not be prohibited."¹⁵

Neighborhood associations of home owners are most vocal in some suburban sections of the Philadelphia metropolitan area in favor of large minimum lot sizes. These associations are quite frank in avowing that they favor such proposals because of tax base considerations.¹⁶ One respondent from the city of Philadelphia who has had close associations with the home building industry testified that in his private conversations with local suburban officials they admitted that tax base considerations were of prime importance in determining policy with respect to land use.¹⁷

Neighborhood Homogeneity. A third value which seeks expression in minimum lot size requirements is neighborhood homogeneity. At least two important aspects of this value are worthy of note. In the first place, the long-term increase in home ownership has given more and more people a stake in the maintenance of property values. A house is often the most extensive financial commitment that a family makes. At the same time the temporary location of many job assignments lends an element of risk to ownership that may not have been present in an earlier day. The modern purchaser must look at a house as an invest-

ment as well as a residence; he must consider his ability to "liquidify" his equity as rapidly as possible, should he, for example, be transferred to another city.

The general mobility of the population points up the second aspect of neighborhood homogeneity. One effect of transience, rapid population growth, and migration from rural areas and small towns to large cities is relatively high turnover in urban residential areas. If this process results in residential heterogeneity, the achievement of a quasi-primary life style may be frustrated. As Gans puts it: "Under conditions of transience and heterogeneity, people interact only in terms of the segmental roles necessary for obtaining local services. Their social relationships thus display anonymity, impersonality, and superficiality."¹⁸ From these two standpoints then the home owner seeks for means to prevent neighborhood instability and to encourage homogeneity.

Does the large lot offer such a means? If the same assumption is made as in the previous tax base discussion, namely, that larger lots mean higher-priced homes, then the large lot does have a contribution to make. Other things being equal, it is better to own the cheapest house in a neighborhood than to own the most expensive. If the last purchaser in a residential area cannot reach Nirvana, which is to be in fact the last purchaser, he can do the next best thing. He can pursue courses of action to ensure that subsequent building will be priced at least as high as his own property. It is also clear that the residents of a higher-priced residential neighborhood will be more homogeneous in their demographic characteristics than the inhabitants

¹⁵ Statement by a representative of the Main Line Board of Realtors before the Radnor Board of Commissioners, December 29, 1958. Reprinted in *The Suburban and Wayne Times*, January 8, 1959.

¹⁶ Charles S. Liebman, *Some Factors Influencing Land Use*, mimeo. Fels Institute of Local and State Government, March 1961.

¹⁷ Interview with an official of the Philadelphia and Suburban Home Builders Association, January 24, 1961.

¹⁸ Gans, *op. cit.*, pp. 10-11.

of low-priced homes, particularly in new subdivisions.

Of course, homogeneity can also be described as segregation. A strong demand exists in many suburbs for large minimum lot sizes, or at least a sliding scale of lot sizes with one district reserved for large lots, so that a particular area will be composed exclusively of a particular social categoric group. One writer has spoken of "wealthier dormitory suburbs whose residents quite clearly and understandably prefer economic class homogeneity with its attendant symbols. The ample house on a spacious lot is such a mark."¹⁹ The large lot is a status symbol because, so the assumption goes, it is beyond the means of lower income groups. But upper income residents desire more than status symbols. As Toll stresses, they seek economic class homogeneity. In turn, economic segregation implies a form of social and racial segregation. Another writer asserts that "there is no question but that acreage zoning regulations are clearly snob restrictions." He goes on to note:

"Segregation by economic groups in residential areas is not really a different problem from racial or ethnic segregation. Since most minorities are heavily concentrated in the lower-income groups, a successful policy of economic segregation will automatically bring about a very high degree of racial and ethnic segregation."²⁰

A number of writers have commented upon the use of minimum lot area re-

quirements in similar terms.²¹ From time to time the courts themselves express strong reservations about such zoning practices. In a decision handed down in 1957 the Pennsylvania Supreme Court held that a zoning provision adopted by a Philadelphia suburb, Easttown Township, requiring a minimum lot size of one acre was invalid. The following statement appears in the opinion:

"A zoning ordinance in a residential district which makes it financially impossible for the vast majority of our married couples and for people of medium incomes to purchase or own a home in that district, is contrary to our Nation's ideals of liberty, private property and equality of opportunity...."²²

The Centrality of Minimum Lot Size Requirements in Suburban Politics

In American jurisprudence, zoning regulations must be justified under the police power: the power to legislate for the health, safety, and welfare of the community. A liturgy along these lines appears in state enabling legislation and in the preamble of most zoning ordinances. Courts must use the police power as the touchstone for zoning decisions. Citizens, however, adopt a more sophisticated conception of the function of law. They do not shrink from approving the use of zoning for far broader purposes including the maximization of the values of amenity, tax base, and neighborhood homogeneity.

¹⁹ Seymour I. Toll, "Zoning for Amenities," *Law and Contemporary Problems*, Spring 1955, p. 274.

²⁰ Norman Williams, Jr., "Planning Law and Democratic Living," *Law and Contemporary Problems*, Spring 1955, p. 330. See also by the same author, "The Evolution of Zoning," *The American Journal of Economics and Sociology*, April 1956, pp. 253-263.

²¹ "Zoning: Permissible Purposes," *Columbia Law Review*, February 1950, pp. 202-220; and Corwin W. Johnson, "Constitutional Law and Community Planning," *Law and Contemporary Problems*, Spring 1955, p. 212.

²² Opinion given June 28, 1957, vacated April 21, 1958, and opinion withdrawn. The opinion was printed in the *Pennsylvania Township News*, August, 1957, pp. 16-18.

Questionnaires were recently sent to a random sample of residents in 16 Delaware County municipalities. Through an analysis of the occupational structure and educational attainment of their populations these communities were divided among high, medium, and low social rank areas. One of the questions read as follows: "Do you favor using zoning laws to keep out of your community the type of people who usually build cheaper houses on smaller lots?" Table I shows the results.

TABLE I—"DO YOU FAVOR USING ZONING LAWS TO KEEP OUT OF YOUR COMMUNITY THE TYPE OF PEOPLE WHO USUALLY BUILD CHEAPER HOUSES ON SMALLER LOTS?"

Social Rank Area	Yes	No	Other
High	48	4	6
Medium	20	6	5
Low	22	4	1
TOTAL	90	14	12

Data taken from returns of a questionnaire prepared by Thomas R. Dye, Research Fellow, Fels Institute of Local and State Government. The survey was made in February 1961.

The question was not phrased in order to give separate measurements of the three values being analyzed. However, it is indicative of tax base and homogeneity values and raises amenity images as well. The results clearly show the sophistication with which citizens are prepared to use public restrictions on land use in order to pursue what, in strict legal terms, are private values. Significantly, only two of the 116 respondents commented upon the "undemocratic" implications of the way in which the question was phrased.

Municipal governing bodies have sought to meet the demands for land use

controls that would satisfy these values. A variety of means have been employed. Minimum cost requirements for a home would be most effective but they are clearly unconstitutional. The Court of Quarter Sessions of Washington County, Pennsylvania, in holding such a provision invalid, stated, "... we have not found a single case which sustains a regulation that a dwelling house must cost at least a certain sum. This would appear to be rather a means of social exclusion than for the purpose of promoting health, safety, morals or general welfare."²³

Minimum habitable floor area requirements may be useful but these also raise constitutional objections, particularly when applied on a sliding scale basis. In 1954 a Pennsylvania court held invalid an ordinance providing for a sliding scale of minimum habitable floor areas.²⁴

Because of the legal cloud over these devices a substitute is required. Minimum lot size requirements appear to fill the bill. Although they are intrinsically less effective than minimum cost or minimum habitable floor area provisions in ensuring that only high priced houses will be constructed, lot size requirements are more likely to receive judicial blessing. The key point here is that in some instances and within some limits large minimum lot size provisions do serve "legitimate" planning functions as, for example, where community facilities are inadequate to serve dense population concentrations or where the topography mitigates against high density. Therefore, the courts are prone to uphold such regulations without examining what other purposes the regulations might

²³ 28 Wash. 221 cited in *Medinger Appeal*, 377 Pa. 217.

²⁴ *Medinger Appeal*, 377 Pa. 217.

serve and without questioning the precise way in which a particular ordinance does in fact serve a "legitimate" planning purpose.

As a result the courts in many states exercise considerable restraint; they have upheld minimum lot restrictions as high as five acres per dwelling unit.²⁵ The peculiar combination of interests that in part accounts for the attitude of the courts is nicely illustrated in the Easttown zoning controversy, referred to above. An interesting alliance was formed after the Pennsylvania Supreme Court held Easttown's one acre zoning invalid. The officials of the township sought a rehearing of the case. They were promptly supported by the Pennsylvania Planning Association and the Devon Citizens Association, a residents' group in one large part of the township. Both associations, among others, submitted briefs urging the court to reverse its previous decision.²⁶ The case was reargued, and a three-to-three decision affirmed the validity of acre zoning. The dissenting opinion reiterated the previous stand that "the present Ordinance is obviously and intentionally intended to exclude from this area the poor and medium income people."²⁷

In point of fact, the dissenting opinion accurately described the motives of the Devon Citizens Association which, so long as it was impossible to prevent any population growth whatever, supported acre zoning as a means of keeping out of the township any but upper-income people.²⁸ On the other hand, the planners

allied themselves with the Citizens Association for completely different reasons; they wished to avoid a judicial determination that any particular lot size is, *per se*, unconstitutional. This zoning case made strange bedfellows indeed.

To summarize the argument so far, there appears to be ample support for the assertion that the widespread demand for low density development enforced through zoning expresses three values: amenity, tax base, and neighborhood homogeneity. In fact, the world of the urban fringe is almost divinely ordered. By the simple device of large lot zoning, suburbanites believe that a municipality can achieve its developmental goals in a single stroke. The community will be beautiful, its taxes will be low, and "undesirables" will be kept out. Minimum-lot-size-zoning requirements become the keystone of the arch, the focus of strong pressures for larger and larger lots, an extraordinarily salient feature of the suburban political process.²⁹

The Efficiency of Large Lots

We now turn to the fourth purpose of this paper: to investigate the question whether large minimum lot size requirements are in fact efficient means for the realization of the political values discussed above. Our conception of efficiency is the same as that elaborated by Simon, Smithburg, and Thompson.³⁰ We assume that the values have now been correctly identified. The crucial question is to what extent, judged in light of the

²⁵ *Fischer v. Bedminster Township*, 11 N. J. 194.

²⁶ *Pennsylvania Planning Association Newsletter*, June-July, 1958, p. 1.

²⁷ *Billbar Construction Company v. Board of Adjustment of Easttown Township*, 393 Pa. 62.

²⁸ Interview with an Easttown resident who asked neither to be identified nor quoted.

²⁹ See, for example, William H. Whyte, Jr., "Urban Sprawl," *Fortune*, January 1958, and Philadelphia Housing Association, "Suburbia Reshaped: The Case for Flexible Zoning Controls," *Issues*, April 1960.

³⁰ Herbert A. Simon, Donald W. Smithburg, Victor A. Thompson, *Public Administration* (New York, New York: Alfred A. Knopf, 1954), pp. 488-512.

values, the presumed results are achieved by the adopted course of action.

We will not consider efficiency from the standpoint of the amenity value. Our subsequent analysis is designed to evaluate the extent to which large lots are efficient means for achieving the tax base and homogeneity values. Our method is an investigation of the relationship between lot size and price of the home.

The rationale of those who favor large minimum-lot-size zoning in order to maintain a high tax base relative to municipal expenditures is that large lots will have more expensive homes than small lots. Since more expensive homes have higher assessed value they provide more tax revenue than less expensive homes. In addition, low density development requires fewer municipal services. Therefore, large-lot zoning policies maximize the ratio of property tax revenues to municipal expenditures. Those who favor minimum lot size zoning as a device for encouraging economic and social segregation also assume that larger lots will have more expensive homes constructed on them and these, of course, will be beyond the reach of lower income groups.

In both cases the assumption that large lots result in more expensive homes must be made. It will not do simply to assume that larger lots by themselves will provide higher tax revenues or that more affluent individuals purchase larger lots. A high positive correlation between lot size and selling price of a home is a key point in the structure of this argument because, in fact, the difference in lot cost at various densities is an insignificant factor in the cost of a home. According to a former president of the Main Line Board of Realtors, "a lot is a lot, regardless of size. You pay almost the same for

a quarter acre as a full acre if both are the minimum lot size."³¹ Another respondent notes that an acre lot costs only 10-15 percent more than a quarter-acre lot, if both are zoned for single family dwelling units. This differential is further reduced by the more extensive public improvements, such as sewers, required to be installed by the builder on smaller lots.³²

Builders and real estate brokers, at least in the Philadelphia area, share the view that larger lots should have more costly homes for an additional reason. The buyer's maintenance expenses increase with the size of the lot. Anyone buying a large piece of property for a home must be able to afford the upkeep of the property. Since this means that the homeowner must be a person of some means, he will, builders assume, want an expensive house.

Lot Size and Price of Homes: Assembling the Data. We now turn to the empirical part of this study: an examination of the key assumption that the price of a home is strongly correlated with lot size. The raw data were obtained from the records of the Delaware County Planning Commission which by state law is required to review all subdivisions in the county before they may be recorded. The records maintained by the Planning Commission indicate, among other things, the number of lots in the subdivision, the lot size, the lot frontage, the availability of public water and sewers, and the price at which the homes would be sold.³³

In order to eliminate any inflationary bias, only those subdivisions approved

³¹ Interview with Art Wheeler, October 10, 1960.

³² Telephone conversation with Matthew B. Weinstein, prominent suburban builder, March 10, 1961.

³³ The authors wish to acknowledge the cooperation of the Delaware County Planning Commission staff and its Executive Director, Peter A. Larson.

between 1956 and 1960 were selected for analysis. In addition, the range in lot size was restricted to quarter-acre and over, up to and including one-and-one-quarter acres. It was clear from inspection of the raw data that the price of houses built on lots of less than quarter-acre has no relation to lot size. Lots larger than one-and-one-quarter acres were eliminated after a preliminary scanning indicated that much of the development on these lots consisted of very cheap housing located in the farming area of the county. This presents no serious problem in the interpretation of the data since only a handful of new residences in Delaware County have been built on lots larger than 50,000 square feet. Finally, three subdivisions with more than 100 lots each were deleted. This was done because of possible cost differentials resulting from mass construction of such large subdivisions. This left 2,687 lots that were subject to analysis.

The accuracy of the sales price data was confirmed through interviews with the Planning Commission staff, conversations with certain builders, and a spot check of ten subdivisions, where the prices seemed far out of line with similar developments in the same general area. With one exception the prices listed by the subdividers were within \$1,000 of the actual basic sales prices and whatever bias existed was always on the low side.

Although a recent study conducted in the Boston metropolitan area found that lot size was not a substantial factor in

determining the price of homes,³⁴ it was felt that this result ought to be examined in the Philadelphia area for two reasons. First, it flies in the face of a widespread assumption about the nature of the relationship between the two variables. Second, whereas little was described of suburban politics in the Boston area, there is ample evidence that in many parts of the Philadelphia area minimum lot size restrictions are viewed as an efficient device for maintaining a high tax base and enforcing economic and racial segregation.

Lot Size and Price of Homes: Analyzing the Data. The product moment correlation coefficient between size of lot and sales price of the dwelling for these 2,687 pairs of observation is .50. Since the differential in land costs per lot is not important in determining the price of homes, one is led to conclude that lot size cannot be used to predict selling price. In sum, zoning policies establishing large minimum lot sizes are relatively inefficient for achieving the given values.

Of course, these policies are established by the municipalities, not by the County. Are the correlation coefficients any higher when they are calculated by municipality? Seven townships in Delaware County had eight or more subdivisions and 124 or more lots approved since 1956 that fell within our lot size range. (The municipality with the next most active residential construction had only four subdivisions approved.) Table II presents these data for the seven municipalities.

We are also indebted to Thomas J. Anton and particularly to David Livingston, who obtained most of the raw data and assisted at other stages in the project.

³⁴ Massachusetts Department of Commerce and the Urban and Regional Studies Section, Massachusetts Institute of Technology, *The Effects of Large Lot Size on Residential Development*, Urban Land Institute Technical Bulletin No. 32, Washington, D. C., 1958.

TABLE II—LOT SIZE AND PRICE OF HOMES
IN SEVEN DELAWARE COUNTY
MUNICIPALITIES, 1956-1960

Municipality	Total No. of Lots	Total No. of Subdivisions Approved	Correlation Coefficient Lot Size and Price of Home
Haverford	124	9	.46
Marple	562	21	.62
Middletown	495	16	.43
Nether Providence	265	17	.79
Newtown	236	8	.83
Radnor	312	25	.58
Upper Providence	229	13	-.10

With the exception of the Newtown and Nether Providence, there is no noteworthy correlation between lot size and

the price of homes. Nor was the relationship any more significant when lot frontage or sewer and water facilities were held constant.

The general lack of relationship is illustrated dramatically by the range of prices of homes within the minimum lot size categories as established by the zoning ordinances of the various municipalities. Table III groups the number of lots on which homes were constructed in various price ranges by the minimum lot size district in which the homes were constructed. The wide price fluctuations within each district are well demonstrated. Homes priced at \$30,000 or more are not built in districts with a minimum lot size below 20,000 square

TABLE III—NUMBER OF LOTS BY PRICE OF HOMES AND MINIMUM LOT SIZE RANGE
IN SEVEN MUNICIPALITIES OF DELAWARE COUNTY, 1956-1960
(price of homes in thousand dollars)

Minimum Lot Size District (sq. ft.)	13- 15.9	16- 18.9	19- 21.9	22- 24.9	25- 27.9	28- 30.9	31- 33.9	34- 36.9	37- 39.9	40- 42.9	43- 45.9	Total Lots
					Haverford Township							124
43,560					22	51		11				84
18,000 (est.)*					7	16						23
11,000 (est.)*						17						17
					Marple Township							562
40,000						22						22
20,000		35		27	75	24						161
12,000	23	197	29	89	23							361
9,800			18									18
					Middletown Township							495
40,000	8		45	10	26	24						113
20,000	91	57		164	33							345
10,000		37										37
					Nether Providence Township							265
20,000			12	11	20	41	38	12		5		139
14,000			53	20		8						81
9,000		45										45
					Newtown Township							236
45,000						128	48					176
25,000					25	9						34
20,000			26									26
					Radnor Township							312
43,560					18	10	2	100	15	7	4	156
20,000					18	62	20				21	121
10,000		21		8		6						35
					Upper Providence Township							229
43,560	27	25				146						198
21,780					10	3						13
12,000 (est.)*		5				13						18

*Estimated on the basis of minimum lot width and actual construction.

feet but, in districts where the minimum lot size is an acre or more, homes are priced from \$14,000 to \$44,000.

If we have analyzed the suburban political process correctly the pressures will all be directed toward very low density zoning policies. Therefore, it might be profitable to look more closely at the pattern of development on acre lots alone. Table III shows a wide price range in this one density category, which is to be expected because of the size of the correlation coefficients. However, when we focus our attention on the *lower* end of the range, some interesting relationships begin to emerge. Table IV gives these data for all the seven municipalities but Nether Providence, which is the only one that does not have a minimum lot size zoning district requiring 40,000 square feet or more.

TABLE IV—SUBDIVISION AND LOTS
APPROVED IN DISTRICTS OF 40,000 SQUARE
FEET OR MORE, 1956-1960

Municipality	Lots	Sub-divisions	Price of Cheapest Home	No. of Homes in that Price Class
Newtown	176	4	\$28,000	31
Haverford	84	6	27,000	22
Radnor	197	14	26,500	18
Upper Providence	198	9	15,990	27
Middletown	113	5	13,500	8
Marple	22	1	30,000	22

Middletown and Upper Providence have had relatively low-priced development on acre lots as low as \$15,000. Prices range upward from this figure, but go no higher than \$29,500. Marple Township has had only one subdivision on acre lots even though a third of its total area is zoned to require minimum lot sizes of at least 40,000 square feet. A professional planner and former member of the township's planning commission

explained that the land owners in this zoning district have not yet chosen to sell their properties for building lots. Asked what type of development would take place when they do sell, he estimated that the most expensive homes would probably not be priced over \$30,000. Houses in some developments might sell for as little as \$20,000.³⁵

The six townships fall rather neatly into two groups. In contrast to Middletown, Upper Providence, and possibly Marple, the three others (Newtown, Haverford, and Radnor) have had *no* acre lot housing priced at less than \$26,700. The median values in Newtown and Haverford are about \$30,000, while in Radnor the median is \$35,000.

The result of the field check of subdivisions gave the authors reason to attach some importance to a \$26,500 basic selling price. In Delaware County, at any rate, a price of about \$26,000 or \$27,000 seems to be a break point in terms of dwelling unit quality. From the standpoint of construction, general appearance, household embellishments, etc., homes in the \$27,000 range were more like \$40,000 than \$20,000 homes.

In the light of these findings it is highly significant that Newtown, Haverford, and Radnor are the only three of the seven municipalities that had sliding scale minimum habitable floor area requirements prior to 1954, when the Pennsylvania Supreme Court ruled them unconstitutional. Since it can be assumed that the three township governments were expressing tax base and/or homogeneity values when they put such provisions in their zoning ordinances, it is all the more significant that these are the only clear-cut instances of communities

³⁵ Interview with Morton Lustig, March 10, 1961.

where "cheaper" homes have not been built in areas zoned for large lots.

Suggested Explanations for Inter-Community Variations

The low correlation between lot size and dwelling unit price poses something of a dilemma. Why is it that so many people think that higher priced homes will be built on larger lots if in fact this does not necessarily occur? Our methodology does not resolve the dilemma but the preceding analysis of the price of homes on acre lots in the seven townships suggests some answers. That analysis showed that in one group of municipalities no homes of less than \$26,500 were built on acre lots. Thus the intended consequence of large lot zoning indeed occurred in the sense that the municipalities were able to put a floor under minimum sales price. If the floor is high enough it may make little difference where the ceiling is.

The intended result was accompanied by large lot zoning policies. The dilemma may then be only another manifestation of the classic fallacy: *post hoc, ergo propter hoc*. We are inclined to believe that this indeed is the appropriate explanation of the dilemma, and we conclude the article by suggesting two reasons for our position.

First, municipalities have many devices other than zoning to prevent lower priced development. Some are formal devices such as subdivision regulations and building codes. Both the substantive provisions of these controls and the way in which they are administered can be effective means. Other devices are informal such as understandings with certain builders and subdividers. There is nothing necessarily illegal or "corrupt" about this. It simply involves understandable identities of interest. For example, in

the 1940's builders who specialized in higher priced homes broke away from the Philadelphia and Suburban Home Builders Association and formed their own group composed only of selected suburban builders. Their purpose was to create an organization in sympathy with the developmental values of the upper income suburbs.³⁶

This leads us to suggest that in some municipalities acre zoning becomes a symbol. The adoption of a large lot zoning requirement in effect posts a "No Trespassing" sign. It warns a certain type of builder that only high-type residential construction will be permitted there.

Our second reason is not unrelated to the first. In many municipalities the conflict over preventing development of low priced homes may have already been resolved. Once having established a particular development pattern the municipality need no longer be concerned about a possible invasion of cheap houses and low income people. The developer seeking to build on acre lots in townships like Newtown, Haverford, and Radnor, will be inclined to construct high priced homes. The profit per dwelling unit is greater, and by virtue of the already-existing development pattern there is ample demand in the area for expensive homes. We are suggesting here the notion of a "critical mass" in the history of community population growth the characteristics of which in large measure determine the characteristics of further development.

To illustrate, let us rearrange our sales price data in yet another way. Research has been done in the Philadelphia area on the residential locations of persons

³⁶ Charles S. Liebman, *op. cit.*

in "prestigious" occupations: bankers, partners in large law firms, brokers, insurance and manufacturing executives, etc.³⁷ A "Prestige Index" was computed for each municipality in the metropolitan area. This Index is the number of prestigious persons who live in the municipality per 10,000 total population. Table V ranks the seven municipalities in order of their Prestige Indices and shows the modal value of homes built on various lot sizes. If less than 25 lots are present in any category they are omitted from the Table.

TABLE V—LOT SIZE AND MODAL PRICE OF HOMES IN SEVEN DELAWARE COUNTY MUNICIPALITIES, 1956-1960

Municipality	Prestige Index	Acre Lots	Modal Selling Price	
			½-Acre Lots	¼-Acre Lots
Radnor	20.7	\$35,500	\$29,500	\$17,500
Nether Providence	15.4	—	29,500	—
Haverford	5.2	29,500	—	—
Newtown	4.3	29,500	26,500	20,500
Upper Providence	1.7	29,500	—	—
Middletown	0.9	20,500	23,500	17,500
Marple	0.5	—	26,500	17,500

Notice in the Table the very high rank order correlation between the Prestige Index and the prices of homes located on lots of half-acre and over. The only exception is modal value of homes on ½-acre lots in Marple Township.

This explanation lays greater stress on the immediate importance of buyer demand in determining sales price but attributes the present development pattern

to past political behavior. There is some evidence that this second reason is in fact a better explanation. We have been informed that two of the three townships having higher priced development still retail sliding scale minimum habitable floor area requirements in their zoning ordinances. Even so, there has recently been no occasion to enforce them. Every proposed subdivision in the last few years has provided for dwelling units so large that they exceed the minimum floor area requirements.

Conclusions

Large minimum lot size requirements have become an important focus of the suburban political process because they are thought to be instrumental in achieving three values: amenity, tax base, and neighborhood homogeneity. Realization of the tax base and homogeneity values depend in large part upon the correctness of the assumption that larger lots result in higher priced homes. The results of this study cast considerable doubt upon the wisdom of making the assumption. The correlation between lot size and selling price is so low that a municipality cannot automatically assure itself of expensive residential areas simply by adopting large lot zoning policies.

At the same time some municipalities with large lot zoning requirements do in fact attract high-priced new construction. In these areas the floor under sales prices may be attributed to forms of political behavior exhibited before the zoning provisions were adopted. The results of this study suggest the need for additional research on the structure and operations of the residential construction industry and on the residential preference patterns of various social groups.

³⁷ Fels Institute of Local and State Government, Metropolitan Research Unit, *Progress Report: Study of Residential Choice of Prestigious Occupational Groups*, (5 pp., ditto, March 1961).

THE JOURNAL OF THE AMERICAN INSTITUTE OF PLANNERS

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Reports and Comments

The Distances - Traveled Technique for Measuring Value of Recreation Areas: An Application

THE PLACING of values upon various types and locations of proposed public recreation facilities is no easy task. This article is based on the assumption that relative values can be measured by factors which take into account the distances which users are willing to travel to reach them.

A modification of an approach described in an article which appeared in this *journal* several years ago¹ is used. The problems that each approach was intended to solve are somewhat different; and the method presented here is not suggested as an improvement but rather as a modification. This article is a by-product of a mail-questionnaire survey of a large sample of Wisconsin boaters. It is written not to prescribe a policy for Wisconsin but to describe and evaluate certain methods.

The Survey

In 1960 the Wisconsin Department of Resource Development mailed questionnaires to a random sample of 10,000 Wisconsin pleasure boat registrants. The questions concerned the type of activities for which the boat was used, the type of physical facility improvements needed, the county of the respondent's residence, counties of use, etc.² More than 5,300 questionnaires were returned, and the usable response was 5,131, or 51 percent.

One question asked: "In which Wisconsin county or counties do you believe we most

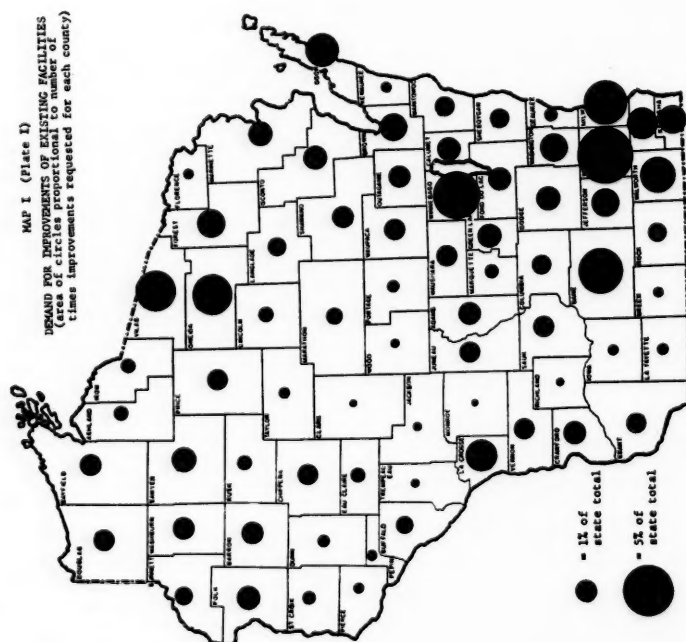
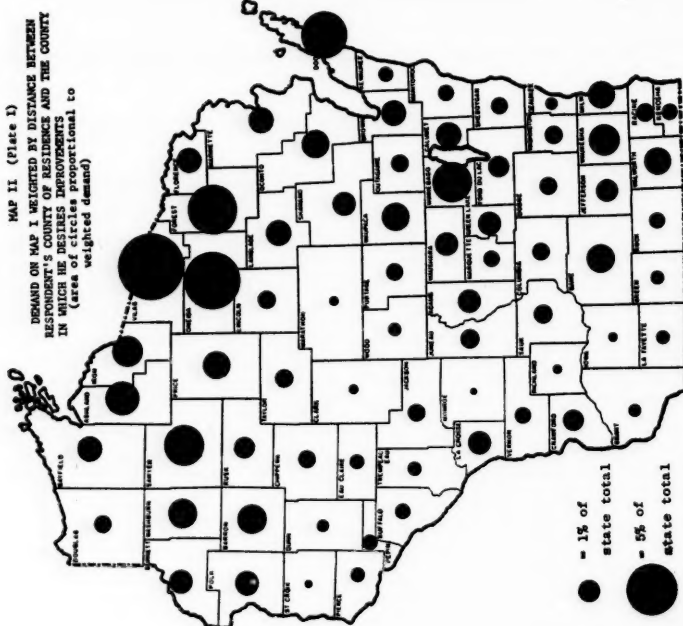
need to improve facilities at existing launching and mooring sites? (Please specify the county by name. If none, write 'none.')" There were spaces provided for the respondent to list up to three counties. Of the 5,131 usable responses, 2,666 indicated one or more of Wisconsin's 71 counties. The minimum number of times one county was mentioned was 3; the maximum, 321. The 2,666 responses indicated one or more counties a total of 4,206 times. Of the other responses, 117 indicated "all," 1,321 indicated "none," and 1,027 did not answer that specific question.³ Was the question phrased in the best manner to elicit answers necessary for the following analysis? Perhaps answers to the question of where they used their boats rather than where they wanted improvements would yield a better basis for determining values of recreational areas. For instance, a popular boating county with very adequate boating facilities might never be mentioned in response to the question about needed improvements. For purposes of this article, the choice between questions does not make much difference; however, for policy prescriptions it might.

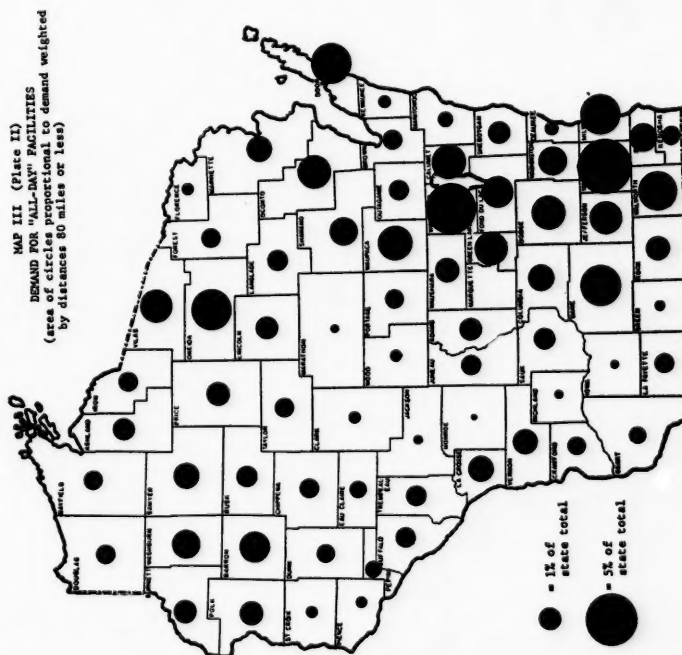
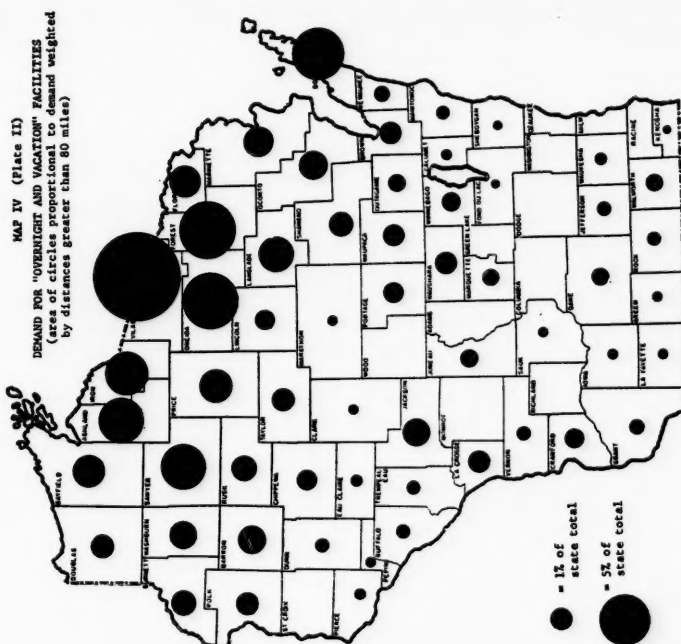
An assumption made by those who prepared the questionnaire was that boaters would be sufficiently familiar with boating facilities in numerous areas that they could judge needs. Of the 1,027 who were tallied as not responding to the question, nearly half inserted the statement that they were not familiar with boating conditions in other parts of the state. Therefore, one-tenth of the respondents said that they were

¹ Andrew Trice and Samuel Wood, "Measurement of Recreation Benefits," *Land Economics*, August 1958, and comments, November 1958. See also Marion Clawson, "Methods of Measuring the Demand for and Value of Outdoor Recreation," Resources for the Future Reprint Number 10, February 1959.

² Findings of this survey are entitled, "Pleasure Boating in Wisconsin." Wisconsin Department of Resource Development, Madison 2, Wisconsin, 1961.

³ About half of the Wisconsin boaters keep their boats moored near the water's edge, often at their cottages. The other half use boat trailers or cartop carriers to haul their boats between their homes and various launching sites. The latter group was more interested in additional improvements.





not qualified to answer. Again, this fact does not influence the analysis made in this article but it does emphasize the problem of estimating specific knowledge of respondents.

Application of Weights by Distance

Four maps accompany this article. Each of them has different sizes of circles for each Wisconsin county. The total area of the circles on each map is the same as the total area of the circles on any other. The area of the circle in each county is proportional to that county's percentage of the state total. When comparing circles for the same county on different maps, we note that a change in the area of the circle indicates a change in the county's relative position.

With certain exceptions in the central and southwest-central part of the state, Wisconsin counties are well-endowed with boating waters. The boating waters are in the form of lakes, rivers, and artificial lakes behind power dams. It is somewhat difficult to measure availability of boating waters because any measure would have to take into account the number and size of the bodies of water, the ease with which boats can be launched, etc. In general, there is high correlation between counties that are popular for boating and counties where there was high demand for improvements at existing facilities.

Map I (Plate I) indicates proportionately the number of times a county was designated as needing improvements. There is no weighting by distance.

The population of Wisconsin is more dense in the southeastern part of the state. The nine largest counties in the state and their percentage of the state's 1960 population are: Milwaukee, 26 percent; Dane, 6 percent; Waukesha and Racine, 4 percent each; and Brown, Rock, Winnebago, Outagamie and Kenosha, 3 percent each.

Map I shows the relative demand for improvements in various counties by merely totaling the time each county was mentioned. It is not quite a one-boater-one-voter approach because the desires of a respondent indicating three counties are given the same weight as the desires of three boaters indicating one county apiece. A more sophisticated approach would have been to divide the weight given counties

needing improvement as indicated by each respondent by the total number of counties he indicated. This would have given equal weight to each respondent. The same observation holds for the other maps also.

Map II (Plate I) weights the numbers shown in Map I by distance between the county of residence of respondent and the county where he desires improvements. Straight lines between county midpoints were used to calculate distances. By not using highway mileages, long distances are shortened more than short distances. Travel time may be a factor; that is, a boater may plan that it takes one hour of preparation before starting any auto trip to boating waters and the total travel time is one hour plus the number of hours on the road. Therefore, using straight-line distances is not unreasonable. When the boater indicated he wanted improvements in his county of residence, five miles was arbitrarily chosen as the distance traveled. This arbitrary choice does affect the findings somewhat. Using a weight of ten miles, for instance, would have given much more weight to counties of high local demand for improvements. Actually, using distances-traveled techniques when, in reality, the distance traveled may be only a few miles or less, seems to be overestimating the value of the technique.⁴

Map II also was plotted on the assumption that a boater would be equally likely to use a facility in an adjoining county as he would one that was 300 miles away. In reality he would be more likely to use the closer one more frequently; but neither Map I nor Map II takes this into account. Later maps do. For clarity one should be reminded that none of the maps in this article differentiate whether the boater uses a trailer to haul his boat to the boating waters or if he drives to where his boat is moored. A more sophisticated approach would make such a differentiation since the boater who uses a trailer desires more as well as a greater variety of facility improvements than does the boater who stores his boat along the water's edge. The assumption

⁴A respondent might have his permanent residence on the shore of the lake where he wants improvements.

is also made that the sole purpose of the trip would be to enjoy boating.

No attempt is made to place a dollar value on these boating waters based on travel expenditures to reach them. While it would be desirable to do so, one can see that this whole approach is already based on a foundation of qualifying assumptions upon which too much additional building should not be done. The opinion is here offered, although not substantiated, that travel time and not travel expense is the controlling factor for this particular type of activity and for the magnitude of travel distances involved.

A comparison of Maps I and II shows that when one weights desired improvements by distance a respondent is apparently willing to travel to make use of the improvements the counties far from the population concentration increase their proportion of total state demand. It seems clear that when a weighting system is used in determining findings, different necessary assumptions will produce different results. If comprehensive planning or aid distribution were to be based on such findings, one would do well to keep this in mind.

All-Day and Overnight Recreational Areas

One of the obvious shortcomings of the approach presented in Map II is that it assumes all the "value" of recreational experiences to be directly proportional to the distance traveled and nothing else. In Map II, the "value" attributed to one boater willing to travel 300 miles would equal the "value" attributed to 30 boaters willing to travel 10 miles. Certainly this can be criticized. It gives undue weight to the desires of those who have the time and money to travel long distances. However, needed remedies for this shortcoming are not readily apparent. One soon finds himself trying to evaluate the subjective benefits of recreation experience to the individual. The problem of intra-personal comparisons also arises. Does the individual benefit the same from seven separate days of boating spread throughout the summer as he would from one week of boating during a vacation? It is unlikely that the "value" of improvements wanted for outings of different frequency and duration would be the same.

Maps III and IV (plate II) represent an attempt to differentiate between all-day and overnight recreation areas.⁵ Map III includes the requests for improvements (weighted by distance) only if that distance is 80 miles or less. That is, if a boater desired improvements in a county which is more than 80 miles from his county of residence, his desires are not shown on Map III. Therefore if one were concerned with improving only the all-day facilities and if it was believed that few or no boaters would drive more than 80 miles one way to enjoy all-day boating facilities, Map III shows the relative needs for all-day facilities. Maps III and IV are constructed in a manner similar to Map II; and many of the observations made regarding Map II apply to them also.⁶

Map IV (plate II) shows demand for boating facilities when the distance between the county of residence and the county in which improvements were desired is greater than 80 miles. If one assumes that boaters who must drive farther than 80 miles one way will do so only if they plan on staying overnight or longer, then Map IV can be considered as showing demand for overnight facilities. Map IV

⁵ This differentiation between areas is from Marion Clawson in *The Dynamics of Park Demand* (New York City, Regional Plan Association, Inc., 1960), pp. 30-36. A third category is "local" recreation areas. An "all-day" area is usually considered as being less than two hours' driving time. The choice of the 80-mile figure used in this boating article is largely empirical. In addition, a multiple regression equation was fitted to the demand for improvements at existing facilities using the number of respondents residing in the county and the inverse of the distance of that county from Milwaukee County as exogenous variables. R^2 equalled .69, which meant that 69 percent of total variations in demand among counties was "explained" by the chosen exogenous variables. (These "variations in demand" are the differences in sizes of circles on Map I). Ordinarily, because exogenous variables may be interrelated, one should not isolate them from one another as if they were independent. However, violating this rule and graphing the influence of the inverse of the distance from Milwaukee County independently of the other data in the multiple regression equation shows that this influence is minimized at about 70 miles. One can speculate that this is the approximate limit of the "all-day" area.

⁶ In Map III five miles was used for distance-traveled factor when the respondent indicated he desired improvements in his county of residence.

contains all requests for improvements not shown on Map III and vice versa.

A quick glance at Maps III and IV shows that all-day boating waters are in highest demand in the southeastern section of the state near the concentration of population, while the overnight areas are located at a greater distance from the southeastern corner. Note that on Map IV some counties show no demand at all for overnight facilities. Breaking down the information on Map II into Maps III and IV shows that some of the criticisms made of Map II can be overcome. Certainly if a planner were to be thinking of campsites in conjunction with boating, use of Map IV would be of more value to him than would Map II. Maps III and IV show how, once a decision has been made to allocate a certain sum for improving facilities at either all-day or overnight areas, one might best allocate funds among the various counties if he believes in the technique used. However, one still does not know how to allocate between "all-day" and "overnight and vacation" areas.⁷ If there are essential differences in the subjective benefits received from all-day as opposed to overnight recreational experiences, then the distance-traveled techniques developed here fail to help. This is an important shortcoming. One must be certain before he applies the distance-traveled technique that the benefits from the recreation are thought to be essentially the same for all users.

Conclusions

Obtaining relative values by weighting by distances one is willing to travel points out to the planner the areas in which the boaters view the resource assets as especially desirable. This approach would appeal to those who favor giving weight to the expenditures made by users of recreational facilities. The drawback is that by giving weight to those having time and money to travel one may be slighting the obligation of government to provide recreation facilities for those having less time and money. For boating facilities this may not be such

a problem since the purchase of a boat, trailer, etc., often requires some degree of affluence.

One serious shortcoming this approach has for comprehensive planning is that it may be of little help in balancing the various recreational demands upon our limited water resources. It would seem that if waters are desirable for boating they would probably be desirable for other recreational uses also. On the other hand, if they are over-used by boaters, they may become undesirable for other recreational uses. Unfortunately, our approach does not tell us how much weight to give to the desires of boaters as opposed to other water users. It may be hoping for too much to expect that questionnaires of the type used in this survey could be sent to all those who enjoy out-of-door activities, with the result being a single comprehensive balancing of all conflicting and complementary desires.⁸

Adapting the techniques applied here would not be dependent on special interview or mail surveys. Today boaters must register their boats and renew their registrations every few years. Many other out-of-door activities also require registration or purchase of a license in one form or another. It is possible to add one or two questions to the registration form regarding the registrant's desires for improvements. If the information on registration forms were to be machine-tallied, it would be fairly easy for the planner to keep abreast of changes in demand. For statewide coverage there is a finite number of distances between county mid-points which, once measured, could be applied as constant weights to changing numbers.

⁸An institutional consideration to be kept in mind is that, when travel is involved, the user, unless he is a cottage owner, may be enjoying facilities provided by other units of government than the one to which he pays taxes.

Analysis by county of the questionnaires referred to in this article indicates that the boater is most likely to travel to the north, west, or northwest of his county to find boating waters. Part of this pattern may be explained by the fact that the farther north, west, or northwest one travels in Wisconsin the less crowded he finds boating waters to be. Not shown in this study are the desires of boaters who reside in the Chicago metropolitan area which is just south of Kenosha County, as shown on the maps.

⁷ Clawson, in his *The Dynamics of Park Demand*, p. 38, states that the greatest future demands will be on the areas used for overnight or longer vacations.

A planner might be happy to avoid the complications of computing values in dollars; and, for the particular data presented in this article, a labyrinth of assumptions would be necessary before any dollar valuation attempt could be made. In an afternoon of boating a boater may easily consume more gasoline in his boat than he used in his auto while driving to the boating waters; and his investment in boat, motor, trailer, and collection of necessary and unnecessary boating accessories may exceed the investment in his automobile. To allocate over time and various waters the outlays associated with one's boating would be difficult.

Just how trustworthy a tool this distanced-traveled approach would be in practice remains to be seen. The fact that demand for public recreation facilities exceeds the most heroic attempts to provide them is reason enough for more than casual concern over the problems of determining the most useful allocation of public funds for them.

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Governments and Housing: Accessibility of Minority Groups to Living Space

AN ENORMOUS amount of debate has been generated in recent years regarding the accessibility of individuals to living space. The subject is fraught with emotional and deep-seated feelings about the rights of certain religious and ethnic groups to select without restriction the place in which they desire to live. This controversy ranges from the extreme notion that the problem does not exist to the other that it threatens to destroy the democratic character of our way of life.

Economic factors play an important role in conditioning the attitudes of those who view the problem as insignificant. Their attention is generally focused on value in a financial sense rather than value as measured in terms of freedom of choice. Those who expound the view that the problem is crucial base their arguments on the extreme need for immediate action to relieve the current social problem as it now stands.

This paper is an objective examination of the role of those who are instrumental in providing places to live for all groups residing in urban areas. It also examines the legal as well as the economic environment in which the controversy exists and evaluates the positions of those involved. It develops the issues first by discussing the way the problem has been attacked in one in-

stance in one state and second, by discussing the economic and personal ramifications of the argument as viewed by those involved.

The Issue In Michigan

In the State of Michigan several bills were submitted to the legislature during the 1960 session prohibiting the use of restrictive covenants in contractual agreements between licensed real estate brokers and owners of real property.¹ The legislature did not enact any of these proposals.

The Michigan Corporation and Securities Commission, acting under its authority to license and regulate real estate brokers and salesmen, promulgated a rule designed to accomplish what the legislature did not. The Commission's action, identified as "Rule 9,"² states that a broker may not ac-

¹ The proposed bills never reached the floor of the legislature, and no hearings were held concerning them.

² "Any broker or salesman who fails or neglects to abide by the following rules and regulations adopted by the Michigan Corporation and Securities Commission shall be presumed to be guilty of unfair dealing:

"9. A broker or salesman, acting individually or jointly with others, shall not refuse to sell or offer for sale, or to buy or offer to buy, or to appraise or

cept a listing of real property for sale or rent in which the limitation of race, creed, or color is made a condition of the agreement. The acceptance of a listing of this nature is grounds for the revocation. If title is held by the broker himself, a broker-owner, he may restrict his sales to whom-ever he pleases. Rule 9 does not restrict arrangements of this kind.

The Corporation and Securities Commission's position is that the act giving it the power to license and regulate brokers of the state provides the authority to promulgate this rule. Section 13j of the act allegedly provides the authority to regulate licensed brokers of the state of Michigan in this fashion.³ In effect, the state's public policy has been declared and the Corporation and Securities Commission is carrying out this policy when it prohibits the limitation of race, creed, or color in listing agreements taken by brokers.

One question presented by this rule is: Does the Commission have the constitutional authority to act in this fashion? And further, is the Commission's rule in line with the avowed public policy of the State of Michigan? If so, then no question regarding its constitutionality exists. There is some question, however, whether the Fourteenth Amendment of the federal Constitution is directly involved. This seems to be true since a question exists as to whether the broker's "life, liberty, or property" would actually be taken away from him through the implementation of the rule. The Corporation and Securities Commission grants the broker a license and there-

fore makes it possible for him to conduct his business in the state of Michigan. There is no question as to the ability to regulate what the broker's conduct should be in certain selected areas. The nub of the controversy presented here is: Does the Commission possess the power to regulate the terms of listing contracts in regard to race, creed, or color?

Nothing is said in the law or in Rule 9 which prohibits an individual from selling his own property to anyone he chooses. This doctrine is grounded on the right of private property and the right of an individual to dispose of it in whatever manner he may see fit. Rule 9 does not question the individual's right to do this for here clearly human rights and property rights come into juxtaposition. Being in opposite positions, the question of whether the human rights or property rights should prevail becomes apparent. The individual is, therefore, empowered to sell as he pleases. Rule 9 merely provides that a person licensed in Michigan shall not aid in the accomplishment of a discriminatory act in violation of the state's public policy. The fundamental issue presented here is concerned with the manner in which the owner's objectives are accomplished.

No administrative board of any state has ever promulgated a rule limiting on this basis the type of listing agreement that a broker may take. In this respect Rule 9 is unique. Regulations have been passed by statute and interpreted by courts of law, but never by an administrative board. The Michigan case of *Shelly v. Kramer*⁴ limited the effect of restrictive covenants in deeds by making them unenforceable in the courts. Prior to this decision, courts enforced restrictive covenants involving conditions based upon race, creed or color. The police power of the state provided the legal basis for enforcing covenants of this nature. The Shelly Case, however, destroyed the ability of the state to effectively exercise the police power in this area.

to list, or to negotiate the purchase, sale, exchange or mortgage of real estate, or to negotiate for construction of buildings thereon, or to lease or offer for lease, or to rent or offer for rent, any real estate or the improvements thereon, or any other service performed as broker or salesman, because of the race, color, religion, national origin or ancestry of any person or persons.

³ "9. A broker or salesman, acting individually or jointly with others, shall not refuse to sell or offer to sell, or to buy or offer to buy, or to receive an offer to sell or to buy or to lease or offer to lease, or to negotiate the purchase, sale or exchange of a business, business opportunity, or the good will of an existing business, because of the race, color, religion, national origin or ancestry of any person or persons."

⁴ See Michigan Statutes Annotated, Vol. 14, 19.803, Sec. 13j.

⁴ *Shelly et ux. v. Kramer et ux.*, 334 U. S. 1, 68 S. Ct. 836; see also, *Hurd et ux. v. Hodge et al.*, 334 U. S. 24, 68 S. Ct. 847. The restrictive covenant or condition declared void does not affect the legality of the grant.

The restrictive covenant in deeds is now legally impotent. The question presented here is whether the Commission's authority under the licensing law prohibits a similar restriction in listing contracts.

The Issue In Other States

The experience in several other jurisdictions, including Massachusetts, California, Oregon, Colorado, and Pennsylvania, has been of a different type.⁵ In those states the action has been taken on the basis of public accommodation statutes. Such laws provide that a place open to, accepting, and soliciting the patronage of the general public must serve all without regard to race, creed, or color. No other state has acted in a direct manner with respect to this problem. No evidence is presently available to show that the public accommodation statutes have in any way been employed to restrict agreements between property owners and licensed brokers.

The juridical basis as discussed above provides the climate within which the issues are cast. Other jurisdictions will be confronted with similar legal problems and will be impelled to solve them in light of prevailing economic and social conditions.

Impact On Brokers

The issues brought to the surface by the proposed rule are centered in two basic areas. On the one hand, real estate brokers are concerned with the restrictions that would be placed on their traditional relationships with their clients. On the other hand, they are concerned with notions revolving around the impact on market values of mixed neighborhoods.

The brokers view with apprehension the implied infringement upon their relatively unlimited right to negotiate with owners of real properties as well as with buyers. Rights that are limited under the rule include: (1) the right to determine to whom the broker will offer his services and the resources of his staff; (2) the right of property owners to openly and without qualification determine with whom they shall deal by limiting the authority of their

brokers to act according to their wishes, and (3) the implied right to exercise all possibilities for obtaining the highest market price possible in selling or leasing real properties.

Brokers are concerned over the expectation that the rule would preclude them from representing any client who might wish to limit the disposition of his property in terms of race, creed or color. They consider themselves to be the professionals who bring a unique package of skills, knowledge and information to the real estate market; and they feel that the result of implementing Rule 9 would be to lower the effectiveness and efficiency, as well as the quality, of the service they render to the public.

The contention that brokers will be circumvented by prospective clients who might wish to include restrictions in the listing contract is more apparent than real. The extent to which brokers perform a genuine service to the public will largely determine the degree of the circumvention. Brokers who fail to provide these professional-type services, or lack the prerequisite training and character, may experience a dwindling volume of business. The evidence available suggests that the demand for services rendered by those who perform similar professional-type functions, for example, architects, engineers and accountants has not diminished as a result of opening their offices to the public without regard to race, creed or color.

Impact On Property Values

The second main area of concern over the proposed introduction of the Rule involves factors affecting market value. The development of residential areas in cities in the United States has been associated with the notion, perhaps real perhaps mythical, that intermixing of racial groups in residential areas has the immediate impact of lowering market value in terms of both rentals and selling prices. This notion has evolved and, indeed, has been supported by the actions of practicing real estate brokers. In general, the arguments for restricting residential areas to one racial or ethnic group are placed in three broad categories. First is the fear of losing in a financial sense amounts invested in real properties. Second is the notion that mixing of racial or ethnic

⁵ For example, see Massachusetts Public Accommodations Law, G.L. C273, Sections 92A and 98.

groups lowers selling prices, rentals, and values. Third is the admission on the part of many concerned that some deeply entrenched racial prejudice may be involved.

The belief that mixing of racial or ethnic groups lowers property values is not confined to the general public and the practitioners in the real estate business. Historically, the attitude was supported by many professional scholars who studied and observed such mixings in residential areas. In 1923 Ernest M. Fisher in his *Principles of Real Estate Practice* stated: "It is a matter of common observation that the purchase of property by certain racial types is very likely to diminish the value of other property in the section."⁶ Somewhat later Homer Hoyt in his study of the structure and growth of residential neighborhoods in American Cities, stated: "It is in the twilight zone where members of different races live together that racial mixtures tend to have a depressing effect on values and therefore on rents."⁷

During the decade of the 1940's some evidence was presented by certain groups in the real estate field, particularly the professional appraisers, which noted that racially-mixed areas might only threaten property values and prices. The evidence suggested that the entry of heterogeneous elements into established neighborhoods might cause market disruptions for temporary periods. Eventually, however, prices tended to move upward toward levels at or near, or in some cases higher, than those prior to entry. One appraisal authority suggested the nature of the doubt that arose in the minds of some of his colleagues when he stated: "Whether rightly or wrongly, some families avoid or leave a neighborhood of mixed race or national origin. This reduces the market for homes in the area and consequently may at first affect certain values adversely. As the neighborhood takes on its new character and assuming equal

maintenance of all property, value trends may reverse."⁸

Little empirical evidence was collected during the early postwar period to prove or disprove the thesis that racial, religious or ethnic penetration of residential neighborhoods had a deleterious effect on values. Not until the Commission on Race and Housing was formed in 1955 was any organized research directed at this issue. The most thorough study made under the auspices of the Commission was conducted by Luigi Laurenti.⁹ He evaluated the impact on selling prices and market values of entry into residential areas by different racial and ethnic groups. Laurenti collected data in the cities of San Francisco, Oakland, Philadelphia, Chicago, Kansas City, Detroit and Portland, Oregon in an attempt to sift fact from fiction with regard to what happens to prices and values when different racial and ethnic groups enter. In all the cities studied the analysis indicated that such entry was associated with a tendency toward rising rather than falling market prices. In some instances the increases were significant. In others the increases were nominal and might well have been accounted for by other factors.

In the cities of San Francisco, Oakland, and Philadelphia the Laurenti analysis indicated that in more than 40 percent of the cases examined prices increased from 5 to 25 percent more in mixed than in non-mixed neighborhoods. Laurenti also found that the minority groups experienced relatively little more difficulty in obtaining financing than did the majority.

The experience of the Russel Woods area in Detroit provides an example of racial and ethnic mobility. The assimilation into a homogeneous well-established residential neighborhood of a substantial number of occupants of different backgrounds indicated that such movement can take place without disrupting normal market behavior.

⁶ Ernest M. Fisher, *Principles of Real Estate Practice* (New York, New York: The Macmillan Company, 1923), p. 116.

⁷ Homer Hoyt, *The Structure and Growth of Residential Neighborhoods in American Cities* (Washington, D. C.: Federal Housing Administration, 1939), p. 62.

⁸ Stanley L. McMichael, *McMichael's Appraising Manual* 4th ed. (New York, New York: Prentice-Hall, Inc., 1951), p. 169.

⁹ For a full account of his findings see Luigi Laurenti, *Property Values and Race* (Berkeley, California: University of California Press, 1960).

A study of property transfers in the area revealed the pattern of selling during the period of change. Market activity at certain times was above normal for the Detroit area. However, market prices did not decline. Some price declines were recorded but in most cases the declines were accounted for by the age and condition of the properties transferred.

The experiences noted above suggest that racial and ethnic entrances into established neighborhoods do not have the impact on values that was formerly believed to exist. A further question may be raised regarding the impact on newly created housing developments. In spite of much discussion and many allegations to the contrary, numerous examples exist demonstrating that it is possible to create financially sound housing projects expressly for mixed occupancy.

During recent years approximately fifty private developments which contain no racial or ethnic exclusions have been created. All of these projects proved successful both from a social and financial viewpoint. One of the most significant examples was the experience of Concord Park Homes in Philadelphia.¹⁰ Concord Park was constructed by private developers who were motivated primarily by financial considerations. The satisfactory experience of Concord Park resulted in the development of three additional projects by the same group. These projects also provided substantial profits to the investors.

Conclusions

Recent experience in urban real estate markets casts doubt on the widely held no-

tion that property values and rents fall when entry of non-conforming individuals occurs. The manner in which such movements have affected values and rents has varied in relation to four external factors. They are: (1) personal income distribution; (2) general business conditions at the time of entry; (3) the pre-entry trend of values and rents in affected neighborhoods; and (4) the manner in which entry occurs.

The employment of public accommodation statutes in a few states and the promulgation of an administrative ruling in Michigan constitute the only formal efforts made at this juncture to attack the problem. In spite of the fact that little action has been taken the problem is one which cannot be ignored indefinitely. The factors which give rise to the issue are based on fundamental rights of a group of business men to freely select their clients. At the same time the question arises as to whether or not the public will be best served by affording the businessmen this unrestricted right of selection. To do so would make it possible to accomplish in a restricted contract what has been declared unenforceable by the Supreme Court of the United States.

It would appear that no fundamental or lasting effect on the relationship between the parties involved would result from regulations of this type. Sellers of property rights would not be injured: first, because they retain the exclusive right to determine with whom they will contract and, second, current evidence does not lend credence to the belief that values will be influenced adversely. Brokers, by the same argument, would not be injured. All people seeking the services offered by residential properties would have equal opportunity to acquire a place in which to live.

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¹⁰ For a complete discussion of the Concord Park development see, Grier and Grier, *Privately Developed Interracial Housing: An Analysis of Experience* (Berkeley, California: University of California Press, 1960), *passim*.

The Decline of Academic Attention to Public Utility Economics

ONE OF THE developments in the social sciences during this generation has been the decrease of emphasis on public utility economics. Some time ago there appeared in a well-known journal devoted to public utility matters an article by John D. Garwood expressing concern about the declining importance of public utilities in college curricula.¹ Part of the evidence cited was the paucity of textbooks recently published in the field. Since that time, the publication of Martin Glaeser's book² provides a significant addition to the list but it also prompts one to ask whether the rising generation of academic researchers and writers are likely to continue cultivating this field and to emulate his standards of scholarship.

Garwood's primary concern was with the universities' and colleges' course offerings at the undergraduate level. As a result of a questionnaire survey he concluded that "public utility economics is offered as a field of study only in the major universities, (and even) many of them no longer carry the course." Although not completely unprecedented, the half century rise and decline of interest from 1907, when John R. Commons first taught public utility economics as a specialized field, to its heyday in the late 1920s and early 1930s and then back down almost to the vanishing point has been impressive—especially to scholars whose professional careers have spanned a large portion of the cycle. Respondents, mostly teachers in the field, attributed the current low state to (1) the specialized nature of the field, (2) the increased interest in other fields, (3) the lack of teachers with preparation in the field, (4) the lack of intellectual challenge in the field now that regulation is widely accepted, and (5) the absorption of this field into the more gen-

eral government and business field.³ As to the general condition, his study confirms the impression of almost any academic economist although individuals would differ as to the causes and might indeed point out that some of the alleged reasons are less causes than they are effects.

As for textbooks explicitly devoted to public utility economics, the survey brought a reminder that the preceding twenty years had produced hardly more than half a dozen⁴ and disclosed that most of the undergraduate courses, not surprisingly, were using the only one which was less than ten years old. A considerable number of textbooks have been written in recent years on the broad subject of government and business⁵ but none of them particularly stresses public utilities. Martin Glaeser's book is the only one since 1950 especially directed to public utility economics and if it is to sell well enough to justify the publisher's cost it probably will have to drive its competitor from the market. A strange commentary on an undergraduate field of study which less than a generation ago provided a lively market for half a dozen texts at the same time!

¹ Although the survey was directed toward public utilities in the narrow sense, similar results would almost certainly have been yielded by a study of transportation, the other principal sub-area of public utilities in the broader sense.

² E. Jones and T. R. Bigham, *Principles of Public Utilities* (New York, New York: The Macmillan Company, 1937); C. W. Thompson and W. R. Smith, *Public Utility Economics* (New York, New York: McGraw-Hill Book Company, 1941); I. R. Barnes, *The Economics of Public Utility Regulation* (New York, New York: F. S. Crofts & Company, 1942); F. X. Welch, *Cases on Public Utility Regulation*, 3rd edition (Washington, D. C.: Public Utility Reports, Incorporated, 1946); E. Troxel, *Economics of Public Utilities* (New York, New York: Rinehart & Company, 1947); H. H. Trachsel, *Public Utility Regulation* (Chicago, Illinois: Richard D. Irwin, Incorporated, 1947); E. W. Clemens, *Economics and Public Utilities* (New York, New York: Appleton-Century-Crofts, 1950).

³ For example, D. F. Pegrum, *Public Regulations of Business* (Homewood, Illinois: Richard D. Irwin, Incorporated, 1959); H. R. Smith, *Government and Business: A Study in Economic Evolution* (New

¹ John D. Garwood, "What Are They Teaching About Public Utility Regulation?" *Public Utilities Fortnightly*, May 23, 1957, p. 733.

² Martin G. Glaeser, *Public Utilities in American Capitalism* (New York, New York: The Macmillan Company, 1957).

Even more important than the matter of undergraduate courses and textbooks, however, is the question of doctoral dissertations and scholarly journal articles. These are the seed for the rising generation of scholarship and, indirectly, of undergraduate teaching. For many years the doctoral degree has been an almost indispensable necessity for entrance into (or at least for advancement in) the academic profession, especially in the larger universities; and the topics which candidates choose for their dissertations are valuable indices of the directions in which their interests lie.

In order to observe the changes which have taken place over the last twenty-five years in the directions which doctoral candidates' interests have taken, a study was made by the present writer, comparing the topics of all doctoral dissertations in economics completed during the five year period 1931-35 with those completed during 1956-60, as reported by the *American Economic Review*. The field, *Public Utility Economics*, did not appear as a separate category in the classification system in either the earlier or the later period. For this study it was taken to include all topics in which there was any mention of "public utilities" or "public utility companies" and all studies of the electric, gas, and telephone industries. Most of these topics were found in the earlier period under the head of *Capital and Capitalistic Organization* and, in the later period, under the head of *Government and Business*; but in both periods a few were found under other heads. Topics referring to transportation were omitted. The fields of public utilities and transportation are not entirely separate, of course, since there is a good deal of overlapping and community of principles. The specific

reference of this study, however, was to public utility economics *per se*.⁶

The number, 31, of dissertations in *Public Utility Economics* completed during 1931-35 was 5 percent of the total number, 619, in all fields of economics. This was about the same as the number in *Theory and its History* and in the combination of *Social Problems and Reforms, Socialism and Cooperative Enterprise*.⁷ It was about twice as many as the number in *Statistics and its Methods* and the number in *Population and Migration*. The passage of twenty five years brought a two-and-a-half-fold increase, to 1,599, in the total number of dissertations in all fields. The number in *Public Utility Economics*, however, not only failed to keep pace with this increase, but actually declined to 23, so that its proportion dropped to only 1.4 percent of the total. Of all the fields comprised by the study, only the field designated as *Economic Systems; Planning and Reform; Cooperation* manifested a more severe diminution. The great increases came in the combination described as *General Economics: Methodology, Price and Allocation Theory, Income and Employment Theory, History of Economic Thought* and in the combination called *Economic History: Economic Development; National Economics, Land Economics, Agricultural Economics, Economic Geography*. All the other fields just about kept pace with the general increase.⁸ This

⁶ It is obvious from general perusal, in any event, that there was no counterbalancing increase in the number of dissertations and articles on transportation topics. On the contrary, the number clearly decreased, although the rate of decrease was not measured in this study.

⁷ Because of some shifting in the *American Economic Review's* field classification system it was necessary to combine certain fields in order to achieve reasonable comparability. For instance, the 1931-35 system designated *Economic History and Geography* as one class, *Agriculture, Mining, Forestry, and Fisheries* as another. The 1956-60 system contained no class directly comparable with either of these; but by combining the class designated as *Economic History, Economic Development, National Economics* and the class entitled *Land Economics, Agricultural Economics, Economic Geography* a total was produced which is reasonably comparable with the total for the two classes in the earlier system.

⁸ This is true even of *Industrial Organization, Government and Business, Industry Studies* if the number of topics in *Public Utility Economics* be deducted therefrom—and from its earlier counterpart.

York, New York: Ronald Press, 1958); H. Koontz and R. W. Gable, *Public Control of Economic Enterprise* (New York, New York: McGraw-Hill, 1956); C. Wilcox, *Public Policies Toward Business* (Homewood, Illinois: Richard D. Irwin, Incorporated, 1955); A. C. Papandreou and J. T. Wheeler, *Competition and Its Regulation* (New York, New York: Prentice Hall, 1954); M. Anshen and F. D. Warmuth, *Private Enterprise and Public Policy* (New York, New York: The Macmillan Company, 1954); M. Fainsod, L. Gordon, and J. C. Palamoutain, *Government and the American Economy*, 3rd edition (New York, New York: W. W. Norton & Company, 1959).

marked shift of doctoral candidates' interest, especially the large increase in the areas of economic theory and economic development and the sharp decline in the areas of economic systems and public utility economics confirms of course the general impression of the teacher who has kept in touch with graduate study in economics over the years.

Changes in the emphasis of scholarly articles were observed by a study comparing the titles indexed in the *American Economic Review* during the three year period 1933-35⁹ with those indexed in the three years 1958-60. The *Review* index may not be a really complete list of all articles published in the various fields of economics because it does reflect the editors' judgment as to which articles are scholarly; but it probably is the best available list and surely is adequate as a basis for comparing the two periods.

The total number of articles indexed was 3,916 in the earlier period and 4,472 in the later, an increase without great significance. Perhaps the most surprising thing to scholars in public utility economics revealed by the study is that even in the hey day of 1933-35, articles in that field numbered only 66 or 1.7 percent of the total number in all fields. This was smaller than the number in any other single field except *Socialism and Cooperative Enterprise*. Passage of twenty-five years saw a decrease of articles indexed in *Public Utility Economics* to 17, or only 0.4 percent of the total. The only other field that suffered an even remotely comparable decline was that designated as *Economic Systems, Planning and Reform, Cooperation*. As in the case of doctoral dissertations the largest increases were registered in the areas of economic theory and economic development. The difference in order of magnitude of the figures for the various fields is so great that it is hardly appropriate to characterize the changes merely as a "shift of emphasis." Academic attention to public utility economics in the

form of scholarly articles clearly has dwindled almost to the vanishing point.

There are some who would say that this is as it should be. The argument is advanced by some scholars, for example, that the characteristics and problems of public utilities are not peculiar to the industries which supply light, power, heat, communication, and transportation but apply in more or less degree to any large-scale industry; that the determination of their policies with respect to price, output, investment, and so on, is not a special problem at all but merely a phase of the more general problem of coping with monopoly, which, in turn, is merely a phase of the still more general problem of government control of business enterprise in all its aspects.¹⁰ This theory and the increased emphasis nowadays on macro-economics are probably the main reasons for the current absorption of public utility economics into the broader economics of government and business. To an economist who considers the economy to be best depicted in terms of the \$400 billion national income, the \$72 billion national aggregate investment expenditure and the 57 million (full-time equivalent) average national employment of 1959, an industry which contributed only \$15.5 of income, \$6.0 billion of investment expenditure, and 1.3 million (full time equivalent) of employment¹¹ may seem rather unimportant. To one whose attention is absorbed in the enormous problems of determining the fiscal and monetary policies of the national government and of assessing their effects upon the income, employment and price level of the whole country, the details of regulating the rates, services, finances, and accounting of individual firms in such a small sector of the economy must seem almost trivial by comparison. To the argument that the relative importance of the public utilities transcends their relative size because the consequences to society of withdrawing their services would be cataclysmic, he may counter that virtually the same thing could be said about the consequences

General observation indicates that the remaining small decline in the proportion of the total was attributable almost entirely to the sub-field, *Transportation*.

⁹ The *American Economic Review* started its index at the beginning of 1933.

¹⁰ See, for example, H. M. Gray's review of Glaeser's book in *Land Economics*, June 1960.

¹¹ See *Survey of Current Business*, July 1960, pp. 12, 13, 28-9, and S-2.

of destroying the steel, chemicals, or electronics industry.

On the other hand, there continue to be some members of the profession who see substantial grounds for treating the public utility industries as a special case in the reason so clearly adduced by Glaeser: "We take it as the cardinal point of departure for this economic analysis that where the supply of a given commodity or service has become *monopolized* so that a given producer has achieved complete control over the same, and where the demand for such commodity or service is sufficiently general so that it has become a *common necessity* the economic power of such a producer must be curbed by the application of political power so that he will deal reasonably with those who are dependent on him for supply. The status of being required to 'deal reasonably' has been called the '*public utility status*,' and industries so classified have been called public utilities."¹² The number of such economists in academic life probably has become extremely small. Of the 31 doctoral candidates who completed dissertations in public utility economics during 1931-35, only 7 now have college or university appointments and specify public utility economics as a field of interest. Several of these indeed have administrative appointments and probably do very little teaching or research. Furthermore, the most fruitful sources of doctoral candidates in the earlier period are now drying up. Universities which produced 28 of the candidates during the 1931-35 period—Chicago,

Cornell, Harvard, Illinois, Iowa, Michigan, Northwestern, Princeton, Stanford, Virginia—have produced only 4 in the past five years; and the output of Wisconsin, which produced the remaining 3 during the earlier period and has produced 6 during the past five years, may diminish.

What is to be done about this state of affairs? Perhaps nothing. Interest in various fields of study, especially in the social sciences, does wax and wane over the years, sometimes going through more than one cycle of rise and decline. Although academic institutions are notoriously resistant to change, they are not absolutely impervious. It may be that the decline of academic attention to public utility economics is inevitable and final.

On the other hand, we may be seeing only the subnormal phase of the cycle. Some slight evidence of this, perhaps, exists in the fact that legal journals continue to carry a great many scholarly articles on the legal aspects of public utility regulation and that some of the larger public utility companies maintain within their organizations research staffs whose standards of thoroughness and objectivity are fully comparable with those of the most renowned academic institutions. These staffs afford ample opportunity for employment of far more college graduates trained in public utility economics than are presently available. Although many, if not most of the institutions of higher learning which offer undergraduate courses in public utility economics regard their courses as academic education in a social science rather than as professional training, nevertheless many public utility companies and related government agencies are almost starving for young people with even just a general understanding and appreciation for the kind of special problems which are their daily fare. For graduate scholars and faculty members, too, there are frequent opportunities to exercise competent talents in this field—usually on a part-time consulting basis. Indeed, the shortage of men academically qualified in public utility economics has had the ironic effect that the experts called in to testify at rate hearings and court proceedings often are really expert only in fields other than the one in which their competence is so urgently needed.

¹² *Op. cit.*, p. 8. In another part of the book (Chapter 24) he attributes the tendency toward monopoly to the fact that in the public utility industries competition is self-destructive because an exceptionally large proportion of the costs are constant and their allocation (in the absence of regulation) is price-determined rather than price-determining. This, in turn, he attributes in a general way to the "technology" of the industries. He might have pointed out more specifically that the efficiency-producing technology so characteristic of the public utility industries is *vertical integration* (utilization of facilities in different stages of production) which invariably requires long lived capital assets in amounts that are large in relation to revenues and therefore gives rise to capital-associated constant costs (depreciation and interest) in amounts that are large in relation to total costs.

An important aspect of the problem is that of financial support, but this is not insoluble. Many academic fields nowadays accept support from outside sources—foundation grants and contracts with government agencies and with industrial firms—as an integral part of the system. This is especially true of “applied” fields where the interest of government and industry is direct and apparent. It is imperative, of course, especially in areas where the subjective judgment of the scholar plays a large part in determining his conclusions, that such support be supplied in a manner which does not subject him to improper pressure or influence.

Three possible applications of this principle to the study of public utility economics suggest themselves. One consists of industry-financed research projects administered by the bureaus through which “organized” research (as distinguished from the informal, unsponsored research which faculty members carry on as individuals) is now handled in many large universities. Such projects would furnish suitable employment of graduate students as research assistants. With the selection of both projects and research personnel left to the bureaus, any suggestion of taint in the financial support of graduate study by such means would be minimized.

A second possibility is that of graduate fellowships administered through autonomous foundations. This arrangement, although somewhat more cumbersome, is more attractive to graduate students than

employment, which slows down the progress of their work. It is important, of course, that such foundations establish and maintain a reputation for objectivity in the selection of fellows. A third possibility, more applicable to faculty than to graduate students, is suggested by the “vacation seminars” which some industrial firms (e.g., DuPont) conduct each summer. These seminars are timed to avoid conflict with the conventional academic year so that faculty members may attend without taking formal leave from their regular appointments. Typically, invitations to such seminars are extended to individuals selected by the universities, and they include a tender of all expenses plus a nominal stipend in lieu of the consulting fees and other income with which research scholars are usually able to supplement their regular incomes during their vacation periods. Some firms are able to conduct such seminars with complete objectivity, but it probably would be better for them to be administered by the universities through the bureaus which many of them have established for precisely this sort of work.

Public utility economics comprises too valuable a heritage of ideas to let it slip into oblivion; and one day there may appear on the academic scene some sparkling intellect who, as Keynes re-awakened his colleagues' interest in the ideas of Mummery, may re-kindle interest in the ideas of Commons.

ROBERT W. MAYER

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